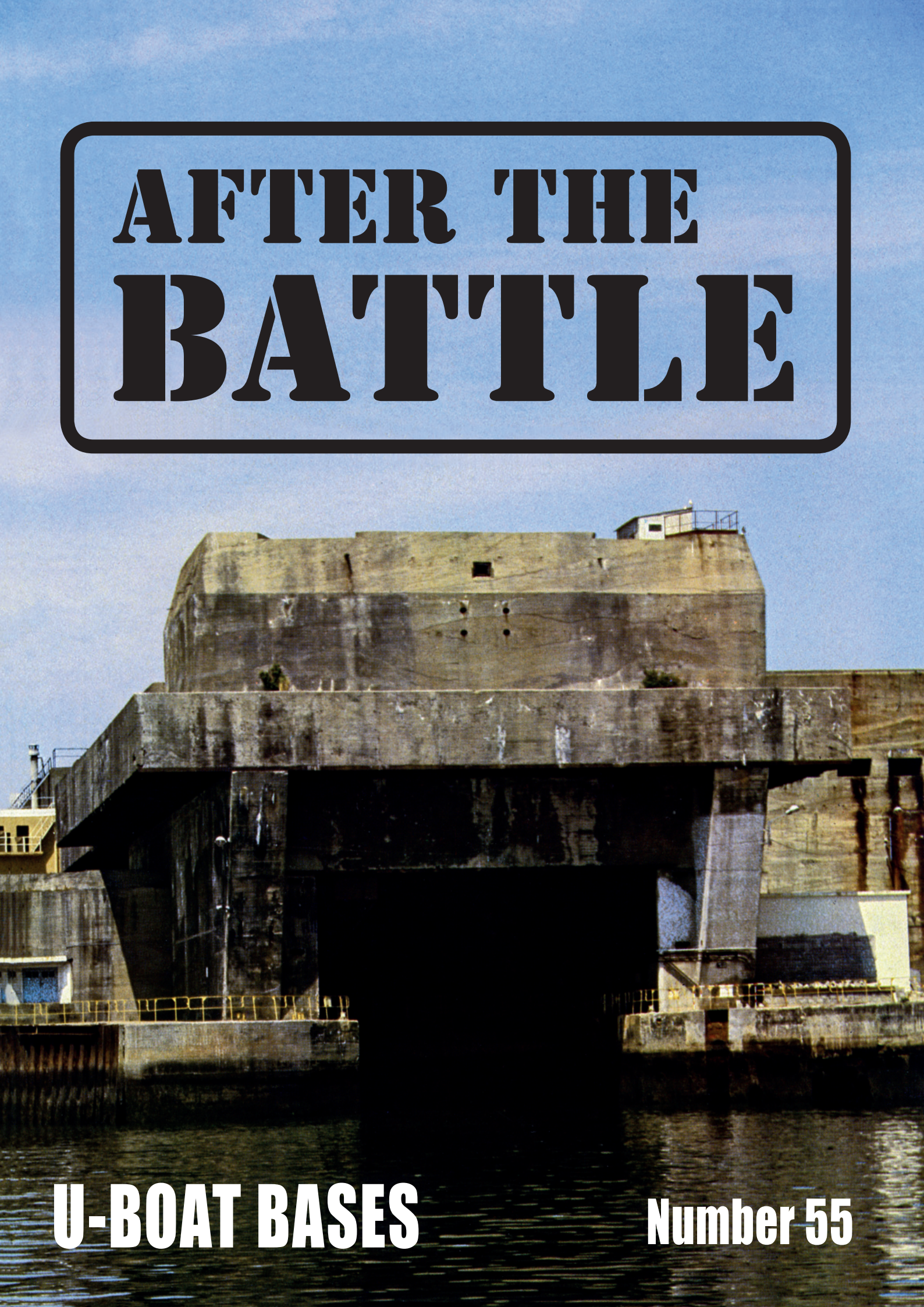
AFTER THE BATTLE



U-BOAT BASES

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Front Cover: The U-Boat pens in France. At Lorient this bomb-proof slipway leads from the water up to the transporter system serving the pens of Keroman I and Keroman II. (Jean Paul Pallud)

Centre Pages: The massive bulk of the U-Bunker at La Pallice overshadows the surrounding installations. French Navy photograph taken in March 1981.

Back Cover: Killed while fighting over Dungeness on the south-eastern corner of England with the famed 303 (Polish) Squadron: Pilot Officer Boguslaw Mierzwa now buried with his fellow countrymen at Northwood, Middlesex.

Acknowledgements: The Editor would like to thank Vice Amiral d'Escadre Claude Corbier for giving Jean Paul Pallud permission to visit the French Navy bases containing U-Bunkers and take photographs. The author would especially like to thank the following officers who acted as guides: Capitaine de Corvette Athymon and Capitaine de Corvette Simon at Lorient, Capitaine de Corvette Latourrette at Brest, and Lieutenant de Vaisseau Falquerho at La Pallice. Additional help was provided by Monsieur Daguzan in the Service Historique de la Marine at Brest and Monsieur Estienne, his counterpart at Lorient. Paol Gorneg of the Ecomusée at Saint-Nazaire gave additional information as did Jean Michel Germain of the Port Autonome de Bordeaux. Grateful thanks are also extended to Roland Hautefeuille and Pierre Coerne.

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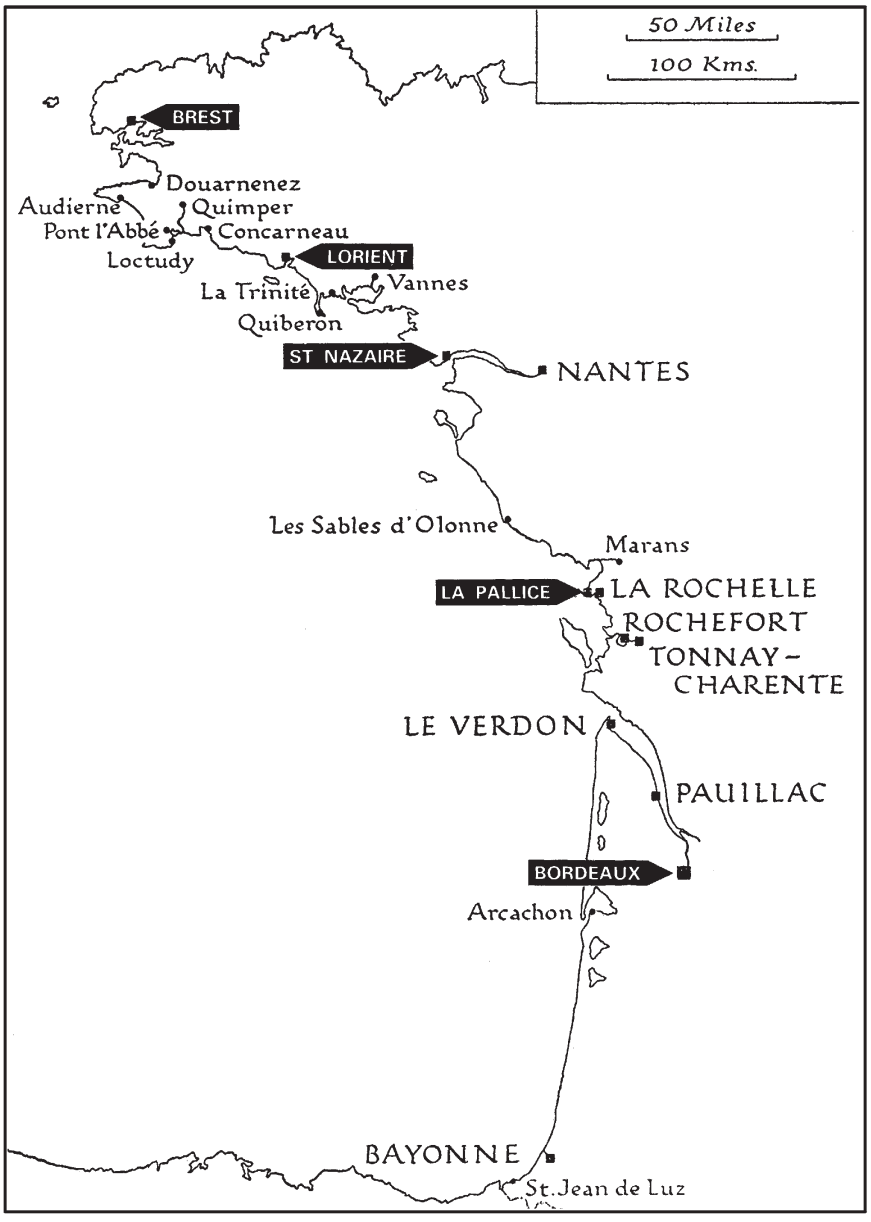
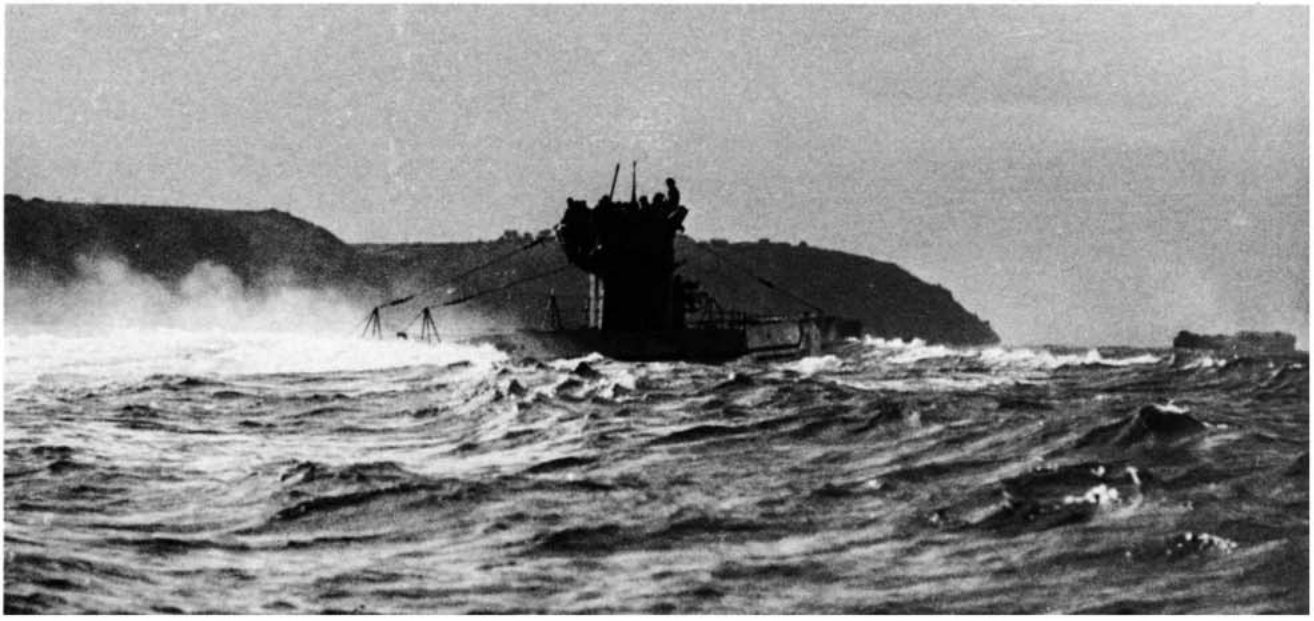
With the capture of the French ports in June 1940, German access to the Atlantic was immeasurably increased. No longer had the U-Boats to run the gauntlet through the North Sea and, for a a while, it appeared quite possible that they might win the Battle of the Atlantic.





U-BOAT BASES IN FRANCE

BY JEAN PAUL PALLUD

The U-Boat arm rose from the ashes after the First World War to become the most effective weapon of the Third Reich and for a brief period the U-Boats seemed to be about to win the Battle of Atlantic, slowly bringing Britain to her knees, until May 1943 when a sudden reversal of fortune left them fighting a losing battle against a materially superior enemy.

The Versailles Treaty had prohibited Germany from possessing submarines, but in less than three years the Reichsmarine was circumventing this restriction, and in 1922 a Dutch firm of ship designers was acquired as a clandestine development office. After the rise to power of Adolf Hitler, plans were laid for the secret development of a U-Boat fleet and parts were ordered abroad for the construction of the first boats. Secrecy soon became unnecessary as in March 1935 Hitler renounced the military provisions of the Versailles Treaty and three months later signed the naval agreement which permitted Germany to possess 45 per cent of Great Britain's submarine total. In September 1935 the 1. U-Flotille was set up under Fregattenkapitän Karl Dönitz a veteran of First World War U-Boat service. In that war, after serving on the cruiser *Breslau*, Dönitz had been appointed First Officer on *U-39* in 1916, then Captain of *UC-25*, and he had escaped death when his new *UC-68* had been depth-charged and sunk by HMS *Snapdragon* in October 1918 and he had been taken prisoner.

Dönitz had pleaded the cause of the U-Boat arm with some success, and the last adopted plan envisaged 300 U-Boats by mid-1942, but Germany went to war in 1939 with only 57 submarines, no more than 26 of them ocean-going Type VIIs and IXs.

Dönitz was promoted to the rank of Konteradmiral in October 1939, and at the same time was given the new title of Commander-in-Chief U-Boats (B.d.U., short for Befehlshaber der U-Boote). Also appointed were three Flag Officers to be administratively responsible for the important operations areas of the West, Norway and Artic; a fourth, Central, was added later. While at sea, the U-Boats were controlled directly by the Operations Department of B.d.U.

The first months of the war were somewhat frustrating as the boats were too few, most of them proved to be too slow and vulnerable, and the torpedoes were faulty. Nevertheless, successes did come, mainly because Britain proved to be equally unprepared for war! After the succesful German Blitzkrieg in the summer of 1940, the French Atlantic ports became available and the U-Boats no longer had to dodge the RAF-patrolled North Sea as the Atlantic was now directly open to them from their new ports. Soon construction of protected facilities for U-Boats at French ports on the Atlantic seabord was under way. By the end of 1941 U-Bunkers had been built at Lorient and Saint-Nazaire, followed shortly by others at Brest, then La Pallice and Bordeaux.

The period between July 1940 and September 1941 was the time of the first great successes, the time of the great aces, and came to be known as the 'Fette Jahre', the fat year. Dönitz's theories of 'wolf pack' attacks were tried and found to work: in October twelve U-Boats attacked convoys SC-7 and HX-79 for four succesive nights and succeeded in sinking 32 ships totalling 154,661 GRT (Gross Registered Tonnage). Successes continued into 1941 but fell short of the 1940 figures, primarily because Britain's anti-submarine measures became increasingly efficient. The loss of the three great U-Boat aces, Prien, Schepke and Kretschmer, in March 1941 was an omen of the 'happy time', as the U-Boat crews later called it, coming to an end.

The number of operational U-Boats had increased. There were 83 at the end of 1940 and 247 at the end of 1941, but less than half of them could be actively searching out and sinking ships at one time, the others being in

A typical scene beneath the waves: the white-capped Kapitänleutnant (Erich Topp of *U-552*) at the periscope and his petty officer with stopwatch. (ECP Armées)

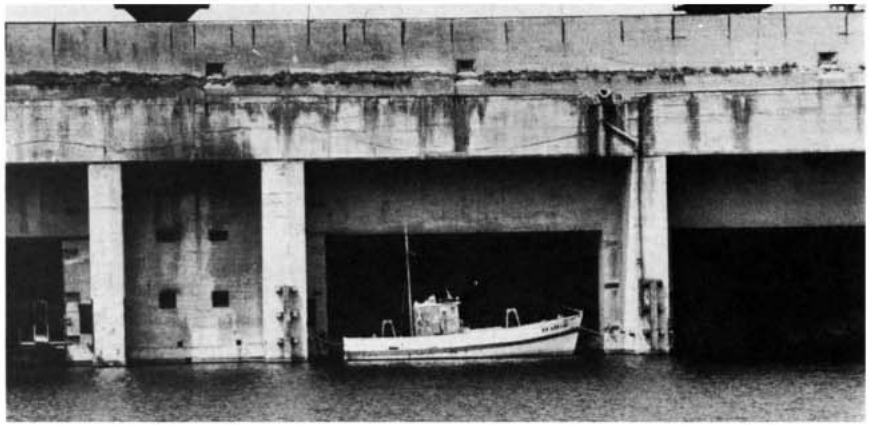
dock or on passage. It is worth noting that there were only about sixteen U-Boats in the Atlantic at any given time during most of the 'Fette Jahre', the average rising to about thirty-five by mid-1941.

The entry of the USA into the war opened up vast new hunting grounds and at the very beginning of 1942 the U-Boats managed to achieve considerable success off the east coast of America; this was to decrease sharply, though, when the convoy system was introduced there in May. The first U-Tanker (supply U-Boat) had come into service that month and this had greatly enlarged the number of U-Boats it was possible to maintain in operation against convoys in the Atlantic. Despite the Allies' ever-growing anti-submarine measures, 1942 ended with 1,094 ships having been sent to the bottom, the most successful year of U-Boat warfare.

Victory, so it seemed, was within the grasp of the U-Boat, but the battle was actually already lost: the Allies' victory in 'the radar war', the sudden increase in convoy escorts, improved air cover and the pace with which the US naval yards were launching ships had turned the tide. By the end of April 1943 there were 429 U-Boats 'operational', but the number of boats in action in the Atlantic, although the average had risen since mid-1942, was only about 110. The turning point was May 1943, when 42 U-Boats were lost. Aboard one of them, the *U-954*, sunk by a Liberator south of Greenland on the 19th with the loss of all hands, was Oberleutnant zur See Peter Dönitz, the Grossadmiral's son.

Escorted by two R-Boats, U37, a Type IX boat flying ten victory pennants, enters Pen Man Bay at Lorient in August 1940. Work has not yet begun on the pens to be constructed on the Keroman foreshore in the background. (ECP Armées)

The 'pens' were, in effect, sheltered docks for servicing and repairs, some of them providing two berths, 'A' and 'B'. Here Kapitänleutnant Erich Topp brings *U-552* into Pen 12B at Saint-Nazaire. Topp ended the war as Number 3 in the U-Boat commander's top ship-sinking league table, beaten only by Otto Kretschmer and Wolfgang Lüth, having sunk 35 vessels. The *U-552*, seen here flying four victory pennants, was a Type VIIC built at Hamburg by Blohm und Voss and launched on September 14, 1940. She served right through the war only to be ignominiously scuttled at Wilhelmshaven on May 2, 1945. (ECP Armées)



No trace of the numbering at Saint-Nazaire today — most of the pens having silted up or been filled in.

The U-Boats found themselves trapped in their bases on the French coast and they now had to cross the Bay of Biscay submerged because of the threat from the air. This as much as halved their patrol time and caused a sharp decline in crew morale and efficiency. U-Boats were modified to carry heavier flak armament, some of them even being transformed with heavy armament into 'aircraft traps' to act as escort for groups of surfaced U-Boats. The first of these escort boats to sail was *U-441*, commanded by Kapitänleutnant Götz von Hartmann, which left Brest on May 22, 1943; their initial engagement against enemy aircraft, the following day, resulted in a Pyhrric victory, for the gunners managed to bring down a Sunderland but after it had dropped its depth-charges, which caused such damage that *U-441* was forced to return for repairs. The idea soon proved to be ill-founded — the Allies again devised effective countermeasures: instead of attacking straightaway, the aircraft would circle out of reach of the anti-aircraft guns and call for help; then, either a number of aircraft would attack at the same time from all directions or ships would arrive to deal with the U-Boat. In early August of 1943, after four boats had been sunk on the surface despite the new anti-aircraft measures, Dönitz had to accept defeat and forbid surface crossings of the Bay of Biscay.

At the end of January 1944 the U-Boat arm was at its strongest, with 447 boats; in April the first of the revolutionary Type XXI boats, *U-3501*, was launched at the Schichau shipyards; new torpedoes were introduced, as well as the schnorkel device, which gave a U-Boat an unlimited submerged endurance and a better chance of survival. But it was too late, the battle was hopelessly lost, and from the beginning of 1944 more U-Boats were regularly sunk each month than merchant ships; August saw a record loss of 44 U-Boats, and during the last four months of the year 64 were lost for 24 ships sunk.

When the Allied invasion of Normandy took place in June of that year, the battered U-Boat flotillas launched what they had to hand against the supporting Allied armada:

Saint-Nazaire — the name synonymous with the Commando raid in March 1942 — was one of the five German U-Boat bases established on the French Atlantic coast, the others being at Lorient, La Pallice (sometimes erroneously called La Rochelle), Brest and Bordeaux. *Left:* **Here the *U-404*, a Type VIIC built by Danziger Werft, of the 6. U-Flotille is seen leaving the submarine basin via the lock to the Avant Port (see map page 12).**

During this voyage in 1942, Kapitänleutnant Otto von Bülow (in white cap) sank the destroyer HMS *Veteran* on September 26. He in turn was sent to the bottom on July 28, 1943 by the combined attacks of No. 224 Squadron, RAF, and the 4th Antisubmarine Squadron, USAAF, in the Bay of Biscay. (ECP Armées) *Right:* **The port suffered heavily from bombing and most of the buildings in the harbour area have been rebuilt.**

seventeen U-Boats were made ready and engaged from Brest, fourteen from Saint-Nazaire, four from La Pallice and one from Lorient. In the face of the invasion forces' anti-submarine measures they achieved very little in return for their losses. Their bases in France threatened, all the U-Boats at sea were subsequently ordered not to return to them but to make for new home ports in Norway. Many failed to reach them — for instance, only four of the seventeen that were at Brest in June, eight of them being lost during attempted operations in June or early July.

The father of the U-Boat arm of the Kriegsmarine in the Second World War: Karl Dönitz, then a Vizeadmiral, pictured in front of a map of the Atlantic in his headquarters at Lorient. (ECP Armées)

Some of their former bases in the French Atlantic ports had been designated as 'Fortresses' — Festungen — with orders to hold out until the end. From Norway occasional liaison trips were made to these, and a French Naval Intelligence report of March 27, 1945, noted that there were two U-Boats at Lorient, three at Saint-Nazaire and two at La Pallice. The report indicated that U-Boats entered 'Fortress' harbours from time to time to bring in fuel, lubricants and spare parts, plus the components for assembling some 'Goliath' remote controlled demolition vehicles.

By then, from the U-Boat arm's last bases in Norway and Germany U-Boat warfare was once more concentrated mainly in the area of its initial operations, the North Sea. U-Bunkers for operating U-Boats had been built at Trondheim — Dora I and II, at Bergen — Bruno, and on Heligoland — Nordsee III. Protected facilities devised specifically for building and fitting-out U-Boats had been built at Kiel — Konrad and Kilian, at Hamburg — Fink II and Elbe II, and at Bremen — Valentin and Hornisse; and other projects were planned at Hamburg, Kiel, Wilhelmshaven, Vegesack, Swinemünde, Rügen, Gotenhafen, Bornholm . . .

January 1945 saw 37 new U-Boats being commissioned, the highest monthly figure ever achieved. With time running out, the U-Boat arm fought on ever more heroically and perished in ever greater numbers as they waged the final months of their losing battle. In fact, it is astonishing that so many survived those last months, when the odds against them were so great. Their final successes were achieved by the *U-2336*, a Type XXIII boat commanded by Kapitänleutnant Emil Klusmeier, which sank two freighters in the Firth of Forth on May 7, 1945.

According to figures compiled by Jürgen Rohwer, 1,170 U-Boats were completed, of which approximately 863 were commissioned as operational boats. They sank some 2,840 ships totalling 14,315,964 GRT. Among these were two battleships, three aircraft carriers, five escort carriers, six cruisers, forty-one destroyers. 630 U-Boats were lost in action; 123 were put out of action while in harbour or home waters. 215 were scuttled by their crews at the close of the war upon receipt of the codeword 'Regenbogen' to prevent them falling into Allied hands.

After Germany's surrender, the first U-Boat to reach England was the *U-249*, which was escorted into port on May 10, but it was days before many U-Boats received word of the war having come to an end, some of them surrendering a week or more later, such as the *U-805* and the *U-873* which surrendered at Portsmouth on May 14 and 16. Others chose scuttling at sea, such as the *U-1277* which was sunk by her crew west of Oporto on June 3, and two, the *U-530* and the *U-977*, went to Argentina, the former arriving at La Plata on July 10, the latter on August 17! *U-181*, *U-195*, *U-219* and *U-862*, four boats taken over by the Japanese Navy, remained 'operational' until the end of the war in the Pacific. About 153 U-Boats were captured by the Allies, of which about 115 were to be scuttled during Operation 'Deadlight': concentrated at Lisahally on Loch Foyle in Northern Ireland and at Loch Ryan in Western Scotland, they were towed out to sea and sunk in late 1945 and January 1946 (*see After the Battle No. 36*).

Of 40,000 or so men who served in the U-Boat arm, about 28,000 lost their lives, about 5,000 became prisoners-of-war and the remainder surrendered at sea or in port in May 1945.

A Type VII slips into Pen 3 at La Pallice in 1942. (Bundesarchiv)

THE ATLANTIC COAST U-BOAT BASES

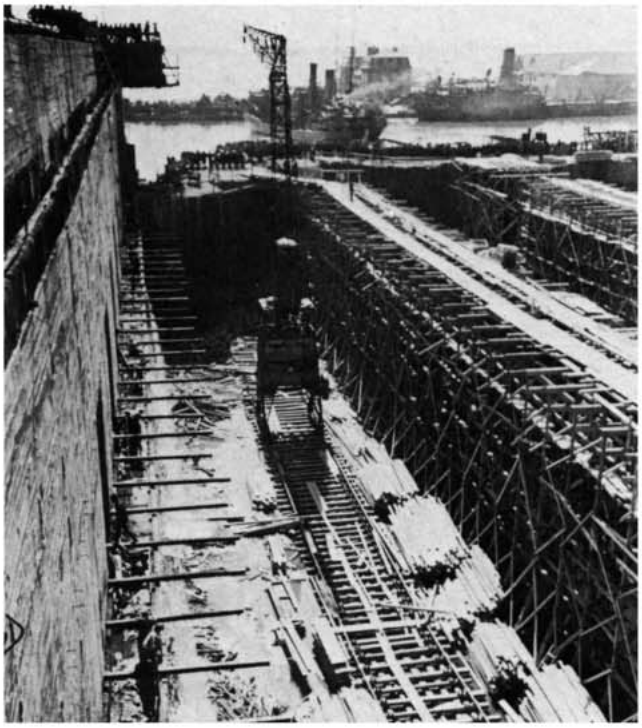
The facilities of the five U-Boat bases constructed on the French Atlantic coast can be placed into three main categories: non-tidal, tidal and onshore (where U-Boats were brought on dry land). The non-tidal were built on a basin, with a lock leading to the open sea, as at La Pallice (La Rochelle), Bordeaux and Saint-Nazaire; the tidal faced onto the sea, as at Brest and two of the pens at Lorient — Keroman III and the Scorff bunker. The onshore facilities were all at Lorient — the 'Dom' bunkers, Keroman I and Keroman II.

The tidal and onshore facilities were built at former French Navy establishments; the non-tidal at ordinary harbour basins, utilising quays and quaysides and the space available but sometimes entailing much demolition, particularly at Saint-Nazaire. Lorient, Brest and Saint-Nazaire were built mainly between 1941 and 1942; La Pallice and Bordeaux (significantly perhaps, farther away from British airfields) between 1942 and 1943.

Because of the crucial importance of the locks as the only way out from the basins to the sea, the Germans started to build sheltered versions of these highly vulnerable if somewhat small targets alongside the existing ones but, as work on them started rather late, only the one at La Pallice was in operation for a short time when all work ceased in the summer of 1944. The one at Saint-Nazaire was not completed and work on the one at Bordeaux still had a long way to go.

Shelters were planned to harbour S-Boats (motor torpedo boats) and R-Boats (mine sweepers); devised on the same general lines, they were however somewhat smaller than the U-Bunkers. Shelters for S-boats were built at Rotterdam, Ostende, Dunkerque, Le Havre and Cherbourg and a large one for both S-Boats and R-boats at Yjmuiden.

Left: **Workmen unload reinforcing rods from a railway flat car in front of the massive 'tower' at La Pallice in 1942. (Bundesarchiv)**
Right: **The present day comparison shows that an additional thick layer of concrete was added later. Now jointly occupied by the French Navy, Army and local authorities, this was one of the film settings used for the recent German film *Das Boot*.**

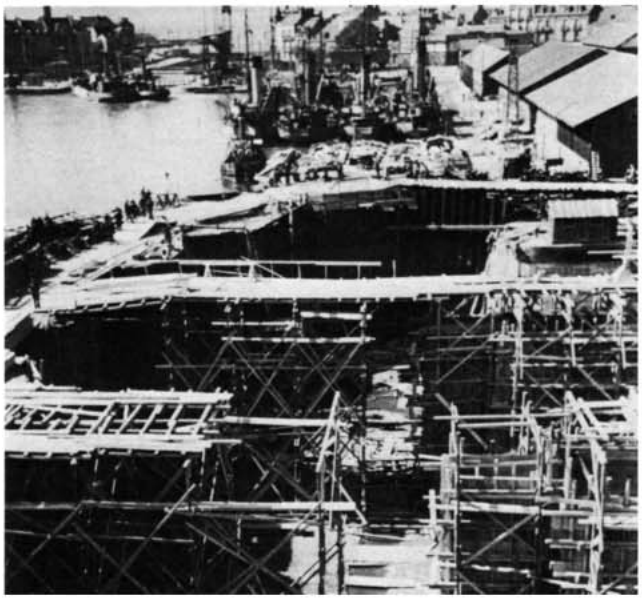


Left: **This German picture shows work underway on the southern side of the shelter at Saint-Nazaire and was taken on the day that the first seven pens were inaugurated. A cofferdam has been constructed to keep out the sea and scaffolding set up for the walls between Pens 13 and 14. The track for the crane has been laid in what will become the void separating Pens 12 and 13.** *Above:* **The Organisation Todt was used for much of the construction work: here carpenters prepare the shuttering for the base of a slab in the tower at Bordeaux. Named after Fritz Todt who died in 1942 and was succeeded by Albert Speer, the Reich Minister for armaments and war production, the OT labour force was employed in occupied countries on construction projects such as the Atlantic Wall and the V-weapon sites. Compulsory service was used to keep it up to strength. (ECP Armées)**

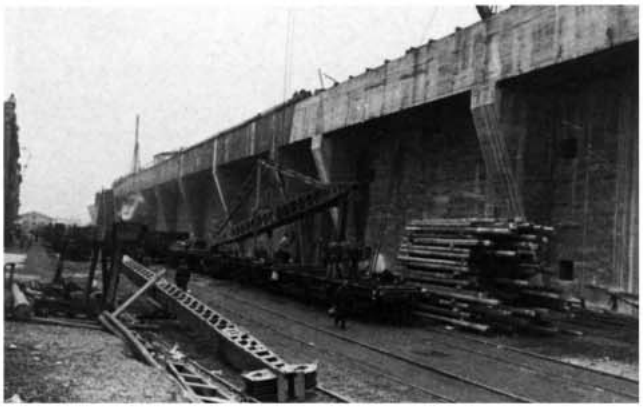
The basic design work for the U-Bunkers was carried out by the Marinebauwesens (Naval Construction Department) at the OKM (Navy High Command); this department, under Ministerialdirektor Eckhardt, had developed large-scale construction methods, tried and tested since the building of the Nordsee shelter with six pens on Heligoland in 1940. Construction was supervised by the Organisation Todt, through OT-Einsatzgruppe West, the organisation's agency for this part of occupied Europe. By far the largest OT operational unit, covering France, Belgium, Holland and the Channel Islands, the OT-Einsatzgruppe West had its headquarters in Paris, and from early 1942 was under the direction of Oberbaudirektor Karl Weis.

The agency's responsibilities spanned hundreds of construction sites, including oil storage depots, industrial installations, V-Weapons launching sites, and defensive works for the Atlantic Wall. The first job it had undertaken for the Kriegsmarine in France had been the construction of the heavy coastal batteries in the Pas de Calais, soon followed by the initial work for the U-Boat bases, the construction of these becoming its main task in 1941. It then had fourteen local OBL (Oberbauleitung; construction management) branches, among them OBL Nord, the contractor for the base at Brest, OBL Mitte at Lorient, OBL Süd at Saint-Nazaire, OBL Paula at La Pallice and OBL Bordeaux. During the second half of 1940, when OT-Einsatzgruppe West was primarily engaged on the construction of oil depots and the initial defences along the coast, the total amount of concrete allocated by the agency came to 213,000 cubic metres. In 1941, when construction of the U-Boat pens was the main task, 60 per cent of the year's allocation of 2,369,500 cubic metres was used on them — the peak month being April, during which 234,000 cubic metres went on the pens. In 1942, they consumed 29.5 per cent of the 3,798,400 cubic metres allocated that year, when the Atlantic Wall took priority. The amount allocated for U-Boat facilities in 1943 was about the same, as work was in progress on the bases at La Pallice and Bordeaux, though in percentage terms this was 18 per cent of a record total of 7,128,400 cubic metres. Only 12.5 per cent of the 3,050,900 cubic metres allocated for the first seven months of 1944 went on U-Boat facilities, and these ranked third behind the Atlantic Wall defences and the V-Weapons sites.

All things considered, Organisation Todt performed a tremendous feat in getting such large buildings completed in so short a time, and due credit belongs to the important German firms involved: Brand, Siemens-Bau-Union and Holzmann AG for the main concrete works, Gute-Hoffnung Hütte for the gantries and the pen doors, Siemens-Schuckert for the electrical design and installation, and M.A.N. for the pumping units,



Left: **Another view of the construction of Pens 13 and 14 at Saint-Nazaire. (ECP Armées)** *Right:* **Our comparison taken from the roof of the shelter in 1985 shows the chimney of the pumping station near the main lock.**



Left: **The construction of Pens 13 and 14 at Saint-Nazaire having been completed, the main crane was dismantled and loaded onto railway wagons. (Bundesarchiv)** *Right:* **Because this precise area was blocked with wagons, in order to be able to obtain a better comparison, we took this picture at the other end of the shelter, just behind Pen 8.**

lock gates and other mechanical systems such as the slipway trolleys and traversers at Lorient. Then there were the numerous German and French companies employed as subcontractors, and a workforce brought in by the OT which included hundreds of German engineers, large numbers of Dutch and Belgian specialists acting as foremen, as well as about 4,500 workers — French, Polish, Portugese, Vietnamese. At Lorient, for example, there were some 15,000 workers and 2,000 trucks at work for the OT on the naval works at the height of the operation, constructing not only the pens, but also power station bunkers, torpedo and ammunition stores, and personnel bunkers.

To carry the enormous amount of building materials from distant sources to the construction site (the average monthly transportation figure for one site was more than 150,000 tons over a period of months at the busiest stage) the OT had to build extensions to the existing railway network and to create new lines or lay light gauge tracks when necessary. At Lorient, when the sand available from the usual local sources was simply not enough to feed the hundreds of great concrete mixers working night and day, the OT installed a suction-dredger in the Pouldu cove, some ten kilometres westwards, to obtain sand from the sea bed, and built a new railway to bring it to the works!

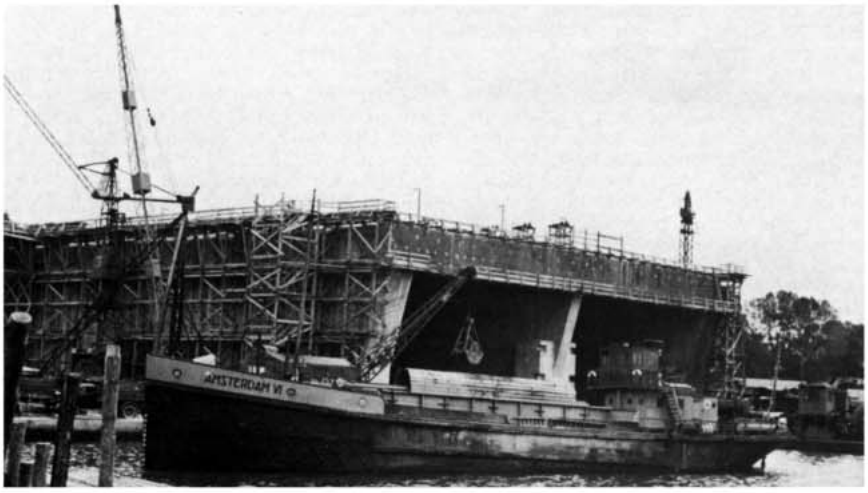
Huge dams had to be built to prevent the water from getting in whilst work was in progress, and the water had to be pumped out of the site for construction below the water level. At the mercy of the sea, work at this stage was sometimes disrupted, and at Saint-Nazaire was set back several weeks.

All the bases except for the onshore 'Dom' bunkers at Lorient, had the same general layout, with a number of pens built side by side at the water's edge and a services area to the rear of them divided up by concrete floors to provide the necessary facilities — repair shops, supply and storage rooms, workshops, power plant, firefighting and first aid posts, offices, living quarters. Between the backs of the pens and the rear services area, a passage spanned the width of the bunker, with a railway line running along it, through large openings at either side sealed by armoured doors. There were numerous small openings for personnel and larger ones for vehicles at the back of the shelter, (at Brest for example, nine for personnel and seven for vehicles).

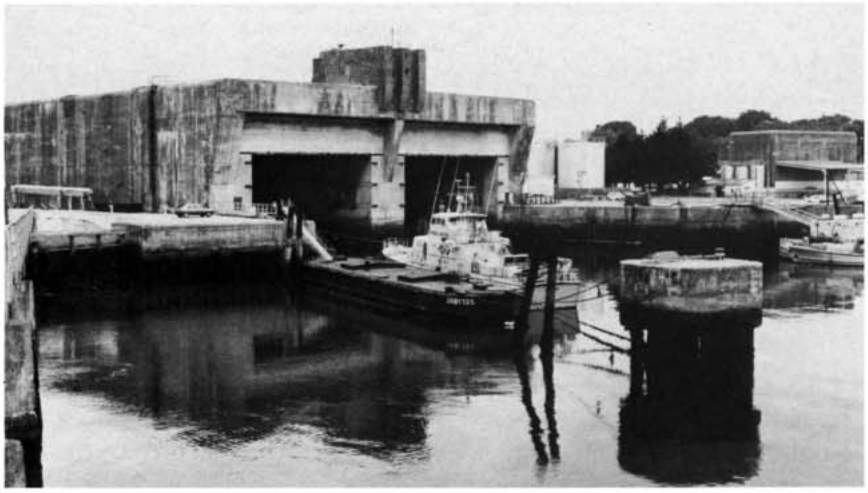
Dangerous stores, oil and torpedoes, were kept some distance away, the oil being brought to the pens by underground pipelines. Electricity was supplied via the general lines but emergency power was provided in the shelter: in the Brest shelter there were three 600-horsepower Rateau diesel generators, each capable of supplying sufficient power to keep the entire building in operation. In the rear services area, steam heating and ventilation were provided. The interior of the shelter was well finished, a telephone system was installed, and the equipment looked, in the words of a SHAEF report of 1945, 'as if designed for a permanent installation'. The sanitary arrangements, though, appear to have left a lot be desired, for at Brest, where several hundred workers were employed, there were only forty-eight toilets, eight wash basins and two twelve-foot trough urinals!

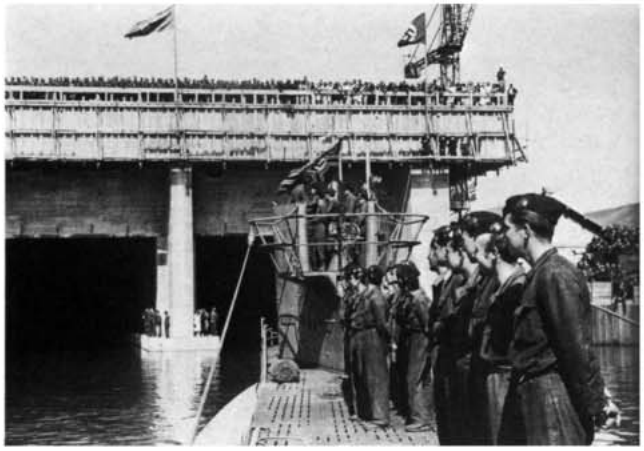
THE PENS

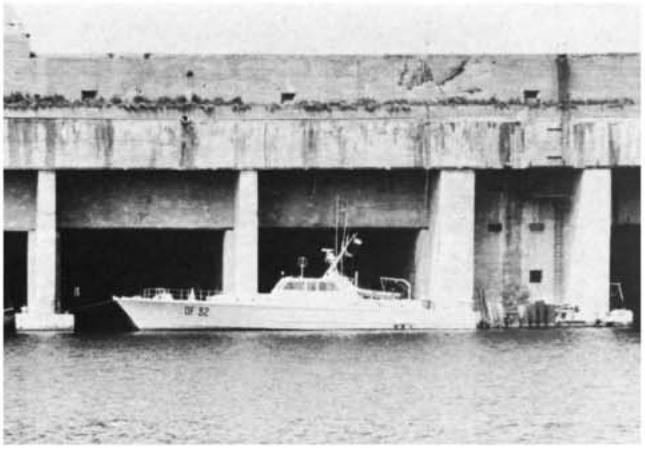
The length and width of the pens varied greatly according to function, whether that of a simple mooring berth into which a U-Boat could go to be resupplied and made ready for sea or a dry-dock into which it could go to be serviced and repaired. Height was however fairly consistent: the entrance height of the pens was between 5.50 and 6 metres, measured from quay level to the



Above: **August 25, 1941: a barge unloads ballast during the final stage of the erection of the Scorff shelter at Lorient. (Bundesarchiv)** *Below:* **Lorient is still an active French naval base and we are indebted to Vice Amiral d'Escadre Claude Corbier for giving permission to take comparisons. These particular pens are now used for surface craft and workshops.**





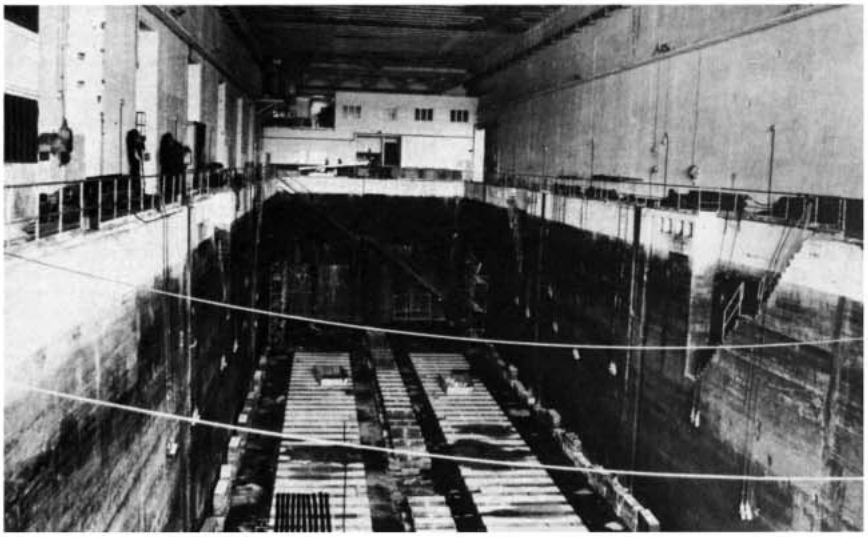


***U-203*, a Type VIIC built at Kiel by Germania Werft, was given the privilege of being the first U-Boat to inaugurate the first completed section of the shelter at Saint-Nazaire on July 30, 1941. The honour was justified as, under the command of Kapitänleutnant Rolf Mützelburg, this submarine of the 1. U-Flotille had sunk seven ships during the previous thirty days. Mützelburg lost his life on September 11: while taking a dip with his crew in the open ocean, *U-203* rolled just as he jumped into the water from the top of the conning tower and he was thrown against the boat and killed. *U-203* survived her captain by only a few months and was sunk south of Greenland by the destroyer HMS *Pathfinder* and aircraft of 811 Squadron, Fleet Air Arm, from the escort carrier HMS *Biter* on April 25, 1943, while attacking the convoy ONS 4.**

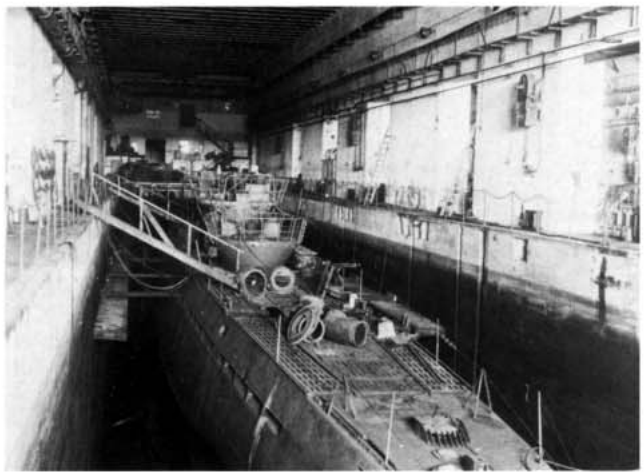
lintel above. From quay to roof, the height of the interior was between 10 and 11 metres. The depth of the pens, from quay level, was between 9 and 11 metres. The width of the quay on each side varied from 1.5 metres to 2 metres and the total length of quayside (i.e. counting the quays on each side of all the pens) was to be measured in kilometres; at Brest, the shelter with the most pens, it reached more than three kilometres.

Each pen was equipped with one or more overhead travelling cranes of 1, 3, 5 or 30 tons capacity, differing from one pen to another, and numerous combinations were to be found. At Lorient, for instance, at the land-based Keroman complex, where all the cranes were made by Levman, there were single 1-tonners in Pens K1, K3, K6, K9, K12; single 3-tonners in K2, K4, K5, K10; two 1-tonners in K7, K8; and two 3-tonners in K11. At the Keroman III shelter all the pens had two 5-tonners except berths K23 and K24 which had both a 5 and 30-tonner.

In most cases, the entrances to the dry-dock pens were opened and closed by a submersible caisson, flooded to sink or emptied by a small electrically-operated pump to raise, and floated in and out of position. In some cases, berths K23 and K24 at Lorient Keroman III for example, the entrance was closed by dock gates. Main



We wanted to illustrate a pen which had been pumped dry and of course the pumps at Lorient are still in working order. However, as some pens in Keroman III (the third shelter complex built on the Keroman foreshore) are occupied by French Navy submarines, of which photography was not permitted, we had to be content with this shot of the empty one comprising berths K13-K14.



Left: **Nevertheless, not to be outdone, we nearly achieved our purpose with this shot taken by Sergeant Bill Augustine on May 13, 1945 at Saint-Nazaire. It features *U-510*, one of the Type IXC ocean-going craft (built by Deutsche Werft), and just back from a Far East patrol. Captured undamaged and all set up in Pen 4 for an overhaul, she was taken over by the French Navy and re-commissioned as the S-11 *Bouan* and remained in active service until 1963. (US Signal Corps)** *Right:* **During our visit to Saint-Nazaire in 1985, we took this comparison in Pen 5, now used for mooring small civilian craft.**

Many original fittings remain; these are the main and drainage pumps — slowly rusting away between two pens at La Pallice.

At Bordeaux, the railway track still runs the width of the shelter — the pens are on the left behind the barriers.

pumps emptied the pens and smaller drainage pumps kept them drained of water that trickled in afterwards. The pumps were grouped four to a station, two main and two drainage. The pumping stations were usually installed in one of the openings in the walls between the pens, and could operate for the pen on either side. Each of the main pumps had a capacity of 3,000 cubic metres per hour, and one drainage pump 380 cubic metres per hour. To take the Keroman III shelter at Lorient as an example, its layout incorporated one station between the first two pens; one station between the third and fourth pens; another between the fifth and sixth pens and a fourth station between the last two, berths K23 and K24. Another form of installation to be found, at Saint-Nazaire or Brest for example, was that in which the pumps were grouped in one or two pumping stations situated in the rear services area: at Saint-Nazaire, there was a four-pump station serving five pens and a two-pump station serving three others. On average it took some three to four hours to empty a pen before servicing could begin.

To protect the U-Boats and the equipment and personnel working on them inside the pens from shrapnel and flying debris during attacks, the entrances to the pens above quay level could be closed off, the lintel above the entrance limiting the height of the opening to about 6 metres. Originally they were closed off with armoured plates mounted on pontoons towed in and out of position by tugs, but this proved to be slow and laborious, the pontoons being particularly difficult to handle in high wind, some of them even capsizing in rough water! Counter-weighted shutters which were slid down from behind the lintel to close the entrances were then installed; these shutters were actually 0.625-metre-thick armoured caissons. Two such shutters (one behind the other) slid down to close off the entrances to the dry pens to quay level, whereas the others generally had only one shutter which extended to within about 1.8 metres above quay level. At Lorient most of the pen entrances were protected by armoured double doors, a metre thick, as were two of the pen entrances at La Pallice.

The sheltered locks were actually pens in themselves and they had their own power and pumping stations, lock gates, protective shutters, etc. Within them a single-span bridge carried a road across which passed through the sheltered lock walls on either side, the bridge being raised as necessary to enable U-boats to come and go.

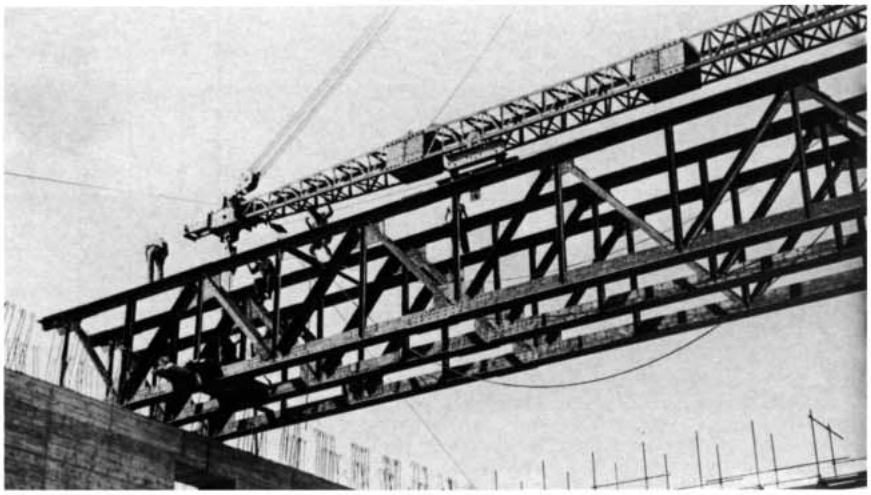
Lock gates are the Achilles Heel of every port for, once disabled, a whole dock can be immobilised. At Saint-Nazaire the outer gate to the old entrance to the Bassin de Saint-Nazaire *(above)*, off which the U-Boat pens lay, was torpedoed during the Commando raid in 1942. German engineers then constructed a second lock (on the left of the picture) a few yards to the north protected by a massive bomb-proof roof, access to which is possible today.

This picture taken in 1946 of the pens at Bordeaux gives a good illustration of the elaborate method of construction adopted to try to produce a bomb-proof roof.

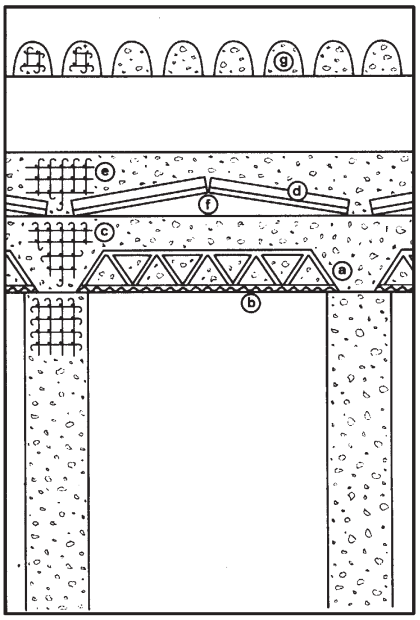
CONSTRUCTION

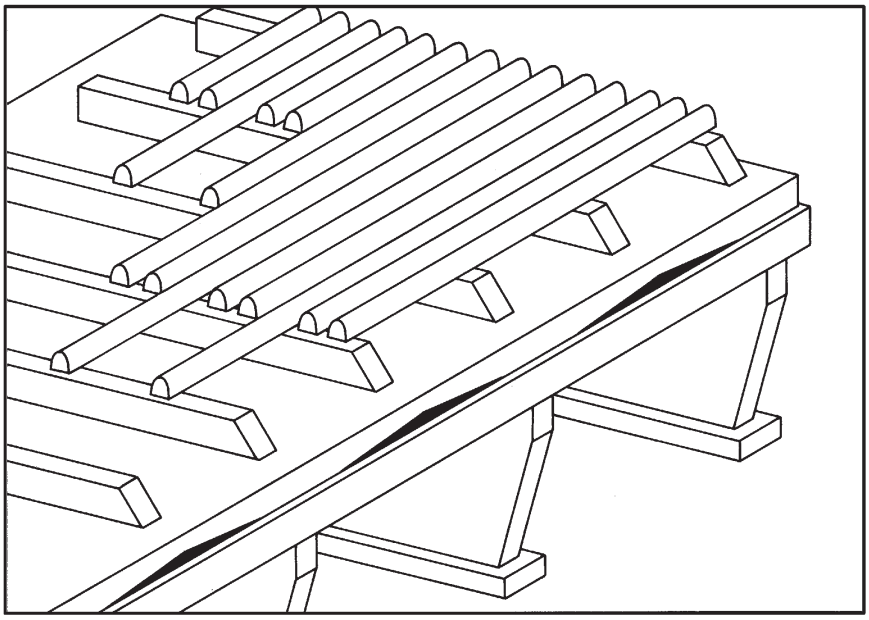
On average, the thickness of the external walls was between 2.5 and 3.5 metres, the minimum being about 1.5 metres; the walls between the pens varying in thickness from 1.15 metres to 2.70 metres within the same building. The roof they supported projected at each end of the building, these cantilevered extensions providing protection for the exterior walls or the entrances to the pens against direct hits and near misses.

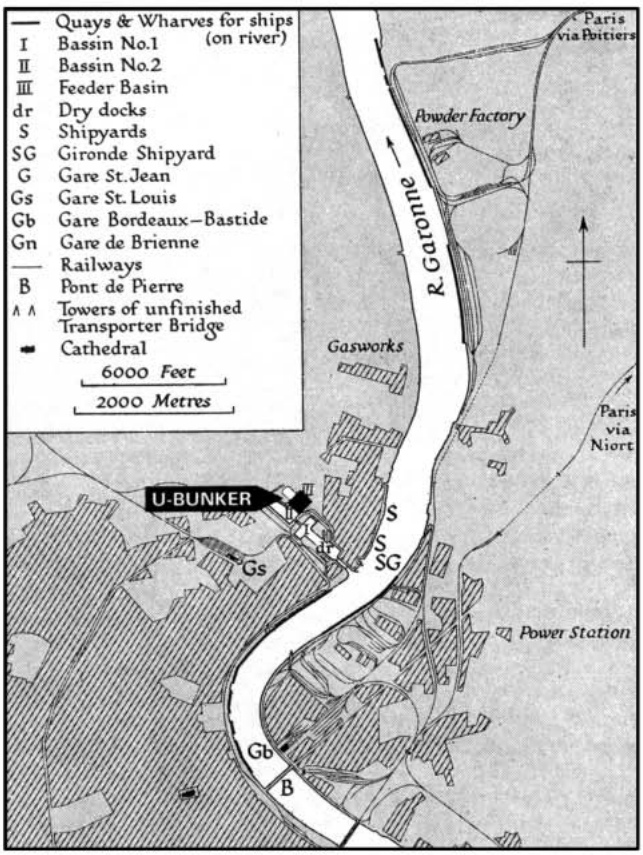
The original thickness of roof was increased to provide additional protection against heavier and heavier bombs. As it was first laid, the thickness of the roof slab covering the entire structure, though it may have differed from one building to another, was about 3.5 metres. The framework consisted of steel trusses spanning the supporting shelter/pen walls, with sheet steel corrugated troughing laid between the trusses (resting on their bottom chords) which served as formwork during construction and later as a means of preventing scabbing. The steel trusses were embedded in the concrete, which was additionally reinforced by half-inch plain round bars. According to tests made after the war by an American survey team, 'the mix was fairly rich, but evidently for convenience of pouring the concrete was made somewhat wet, and as a result was only average in strength. The failures of both the concrete and steel specimens were normal in all cases; however, some of the concrete tests fractured through the coarse aggregate, as was expected because of its softness.'

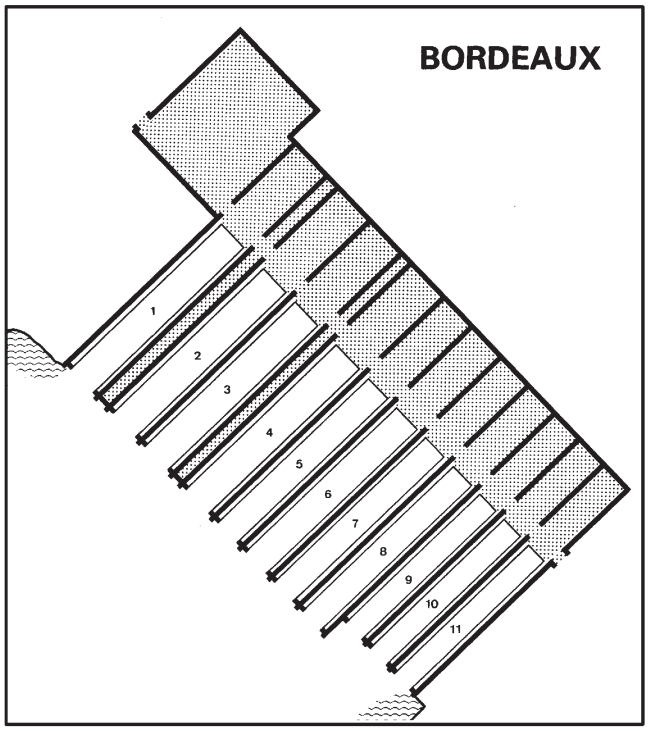


Prefabricated steel trusses were laid to span the walls at about 1.5 metre intervals and, after corrugated metal shuttering was placed between their lower chords, the whole structure was encased in concrete. *Below left:* **Diagram of the roof construction above the pen walls. (a) The steel trusses; (b) corrugated permanent shuttering; (c) first layer of reinforced concrete; (d) second layer pre-cast beams and (e) reinforced concrete; (f) triangular void created by pre-cast beams laid tilted against one another (as at Bordeaux and Lorient, but which were also laid flat spanning longitudinal supports as at La Pallice, creating a rectangular void), the weight of the second layer being borne over the pen walls; (g) the Fangrost 'bomb trap' inverted-U-shape beams above the explosion-absorbing space (support walls not shown).** *Below right:* **Erection of the Fangrost superstructure on the second layer of the roof.**



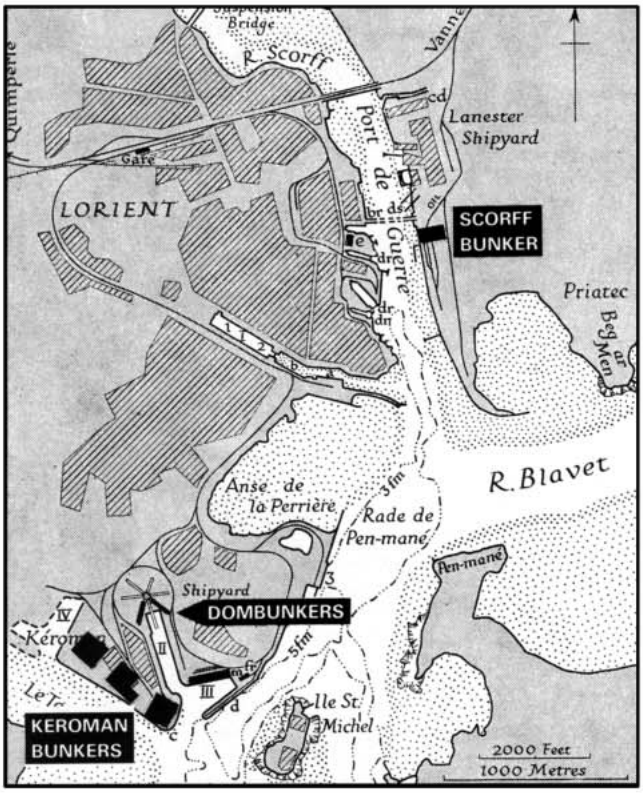


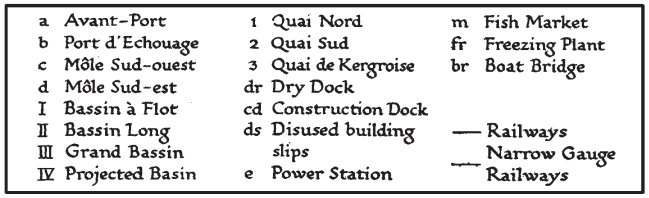


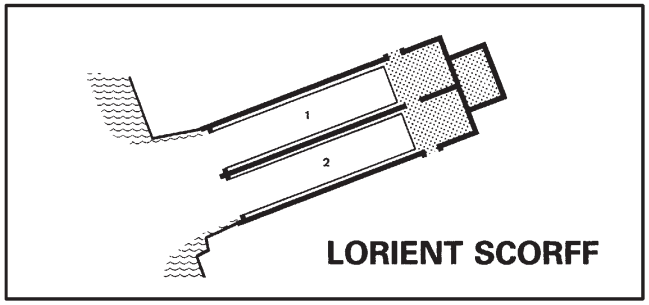


At Bordeaux, an inland port nearly one hundred kilometres from the sea up the river Gironde, the U-Boat shelter — it provided fifteen sheltered berths, three of them being dry-docks — was built right in the town on the north-eastern side of Bassin 2.

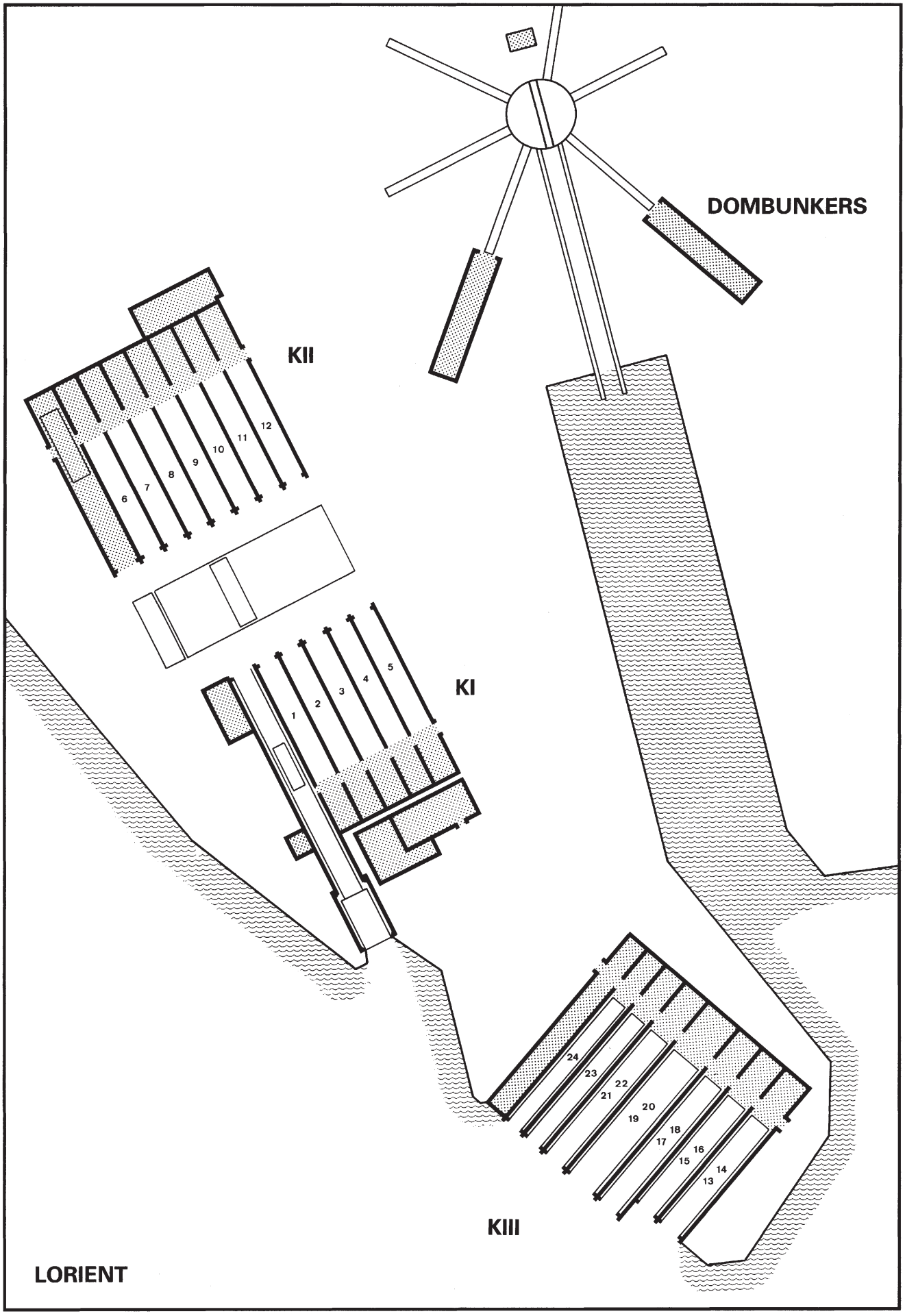
Reinforcement of the roof came about with the adoption of new 'Sonderbaustärke' standards at the end of 1942. This being limited by the carrying capacity of the original slab and its supports, the German engineers had to devise means whereby the additional load did not overstress the structure. Another layer of concrete was therefore poured above the first, with no provision for bonding the two together with reinforcing bars; and to cause as little stress disturbance as possible to the original roof, the second layer was constructed so that its weight was borne above the supporting walls of the pen, the concrete being poured onto a formwork of pre-cast beams overlaid with reinforcing steel bars, the beams being placed in rows of two, tilted against one another at a shallow angle (about 80 centimetres at its vertex above the original roof) and resting on the original roof along the line of the pen walls below. Alternatively, rows of single beams spanned concrete supports, about 45 centimetres high, laid on the original roof along the line of the pen walls. The thickness of this second layer could differ greatly, not only from one building to another, but on the same building: it was about 2.10 metres at Bordeaux (giving a total thickness of 5.60 metres), and as much as 3.80 metres above Pens 1 to 5 at La Pallice (giving a total thickness of 7.30; metres); 3.00 metres thick above Pens 6 to 10. Quite







Lorient was by far the most extensive U-Boat base established in France by the Kriegsmarine, which at first harboured its U-Boats in the French Port de Guerre in the Scorff river and then built a completely new base on the Keroman foreland. Whereas the U-Bunker on the Scorff *(above)* and the third to be built at Keroman were much like those at Brest, La Pallice, Saint-Nazaire and Bordeaux, the system of bringing U-Boats onto dry land was unique to Lorient. Initially two Dombunkers were built beside a small existing slipway in the civilian shipyard, but the construction of a huge land-based complex at Keroman *(opposite)*, two shelters served by a protected slipway and a transporter system, provided facilities for twelve U-Boats.


DOMBUNKERS
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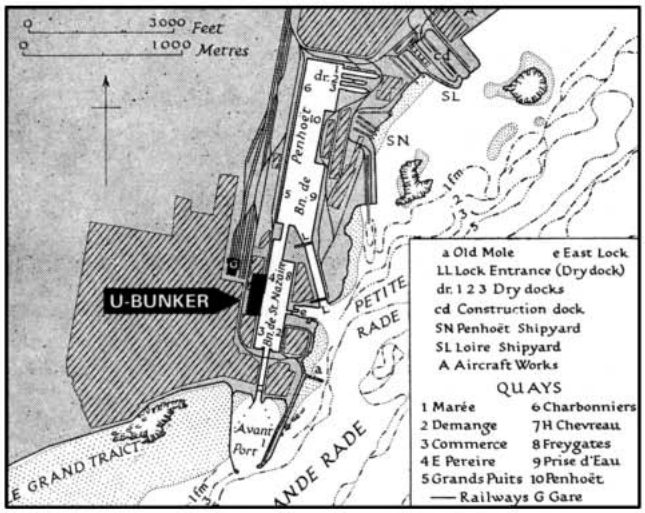
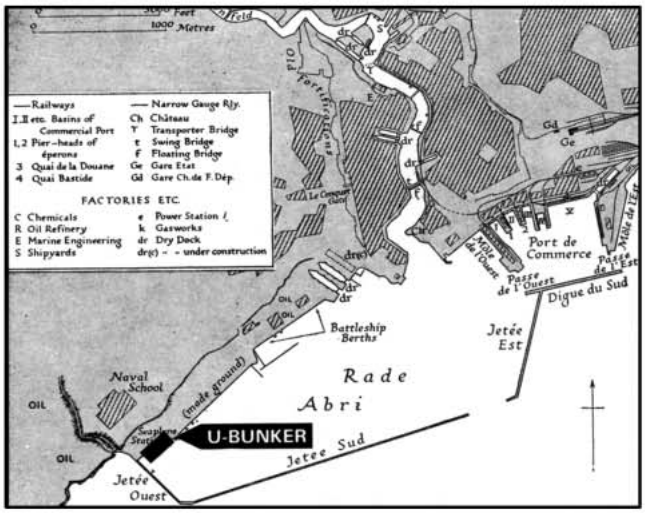
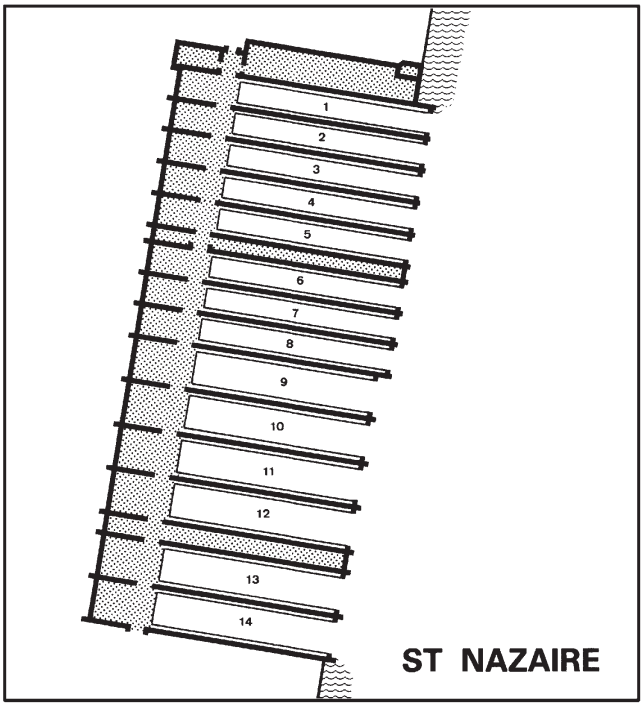
LORIENT

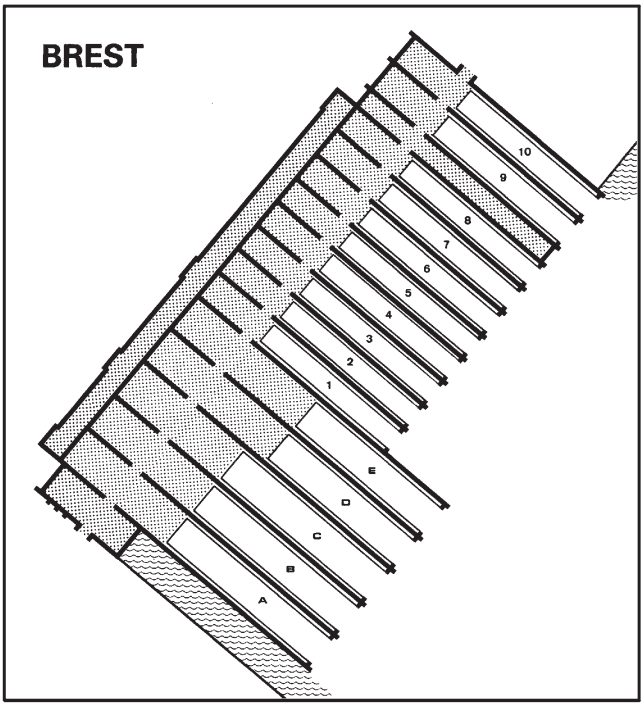


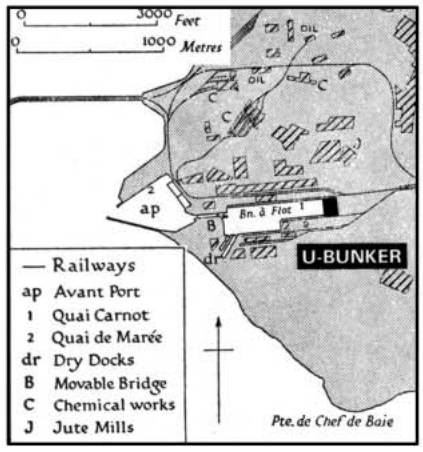
What the Zeebrugge raid was to the First World War, so Operation 'Chariot' at Saint-Nazaire was its Second War parallel. The purpose was to deny the use of the huge dry-dock (which had been constructed for use by the French liner *Normandie*) to the *Tirpitz* by destroying the lock gates (L). The submarine base lay on the western side of the Bassin de Saint-Nazaire.

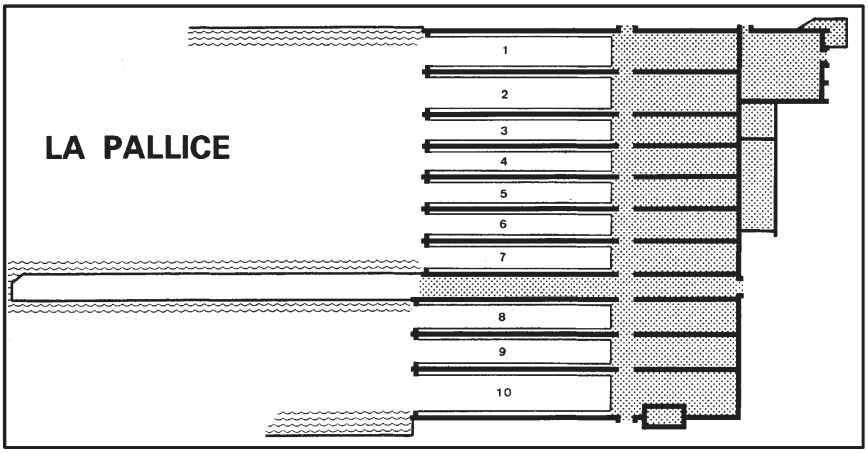


At Brest, after having used the French Port de Guerre in the Penfeld river, the U-Boat base moved to the new U-Boat shelter — it provided them with twenty protected berths, half of them being dry-docks — built some distance to the west on a former French seaplane station. The port militaire along the Penfeld river and dry docks (dr) is where the *Scharnhorst* and *Gneisenau* lay for so long in 1941.









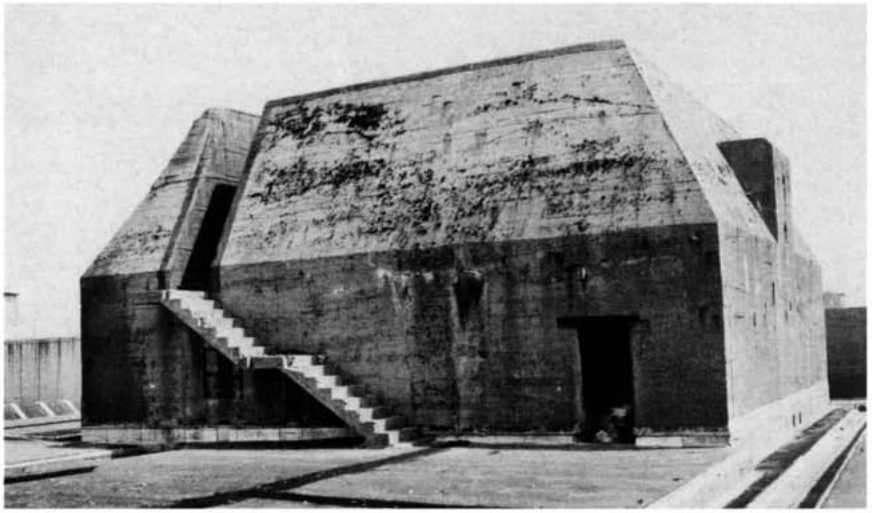
La Pallice is often confused in wartime reports with the old port of La Rochelle, 6 kilometres to the east.

Called the 'Fangrost', this is the partially-completed bomb trap superstructure on the roof at Saint-Nazaire.

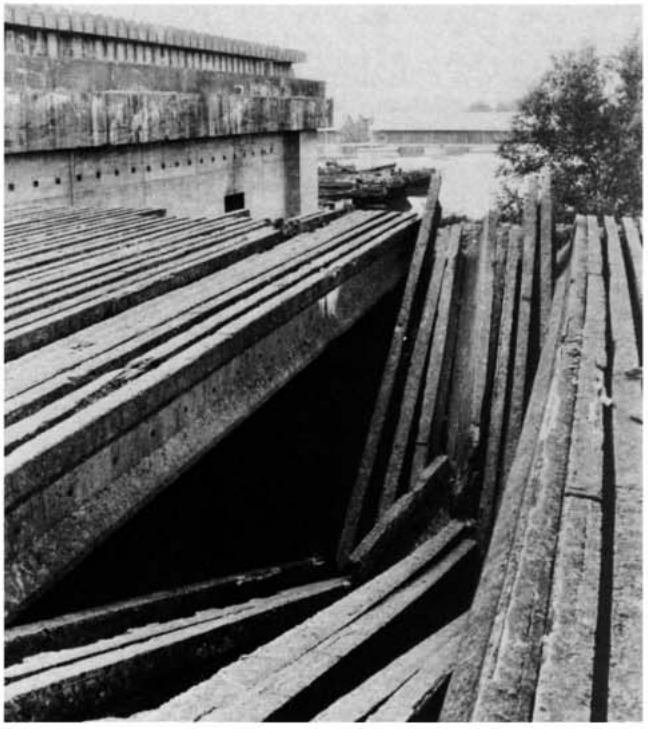
The explosion-chamber (this is Bordeaux) was to absorb the shock wave from a bomb detonating on the U-beams.

often, at Brest and Bordeaux for example, it was accepted that the rear services area should be less protected than the pens and the second layer was not added.

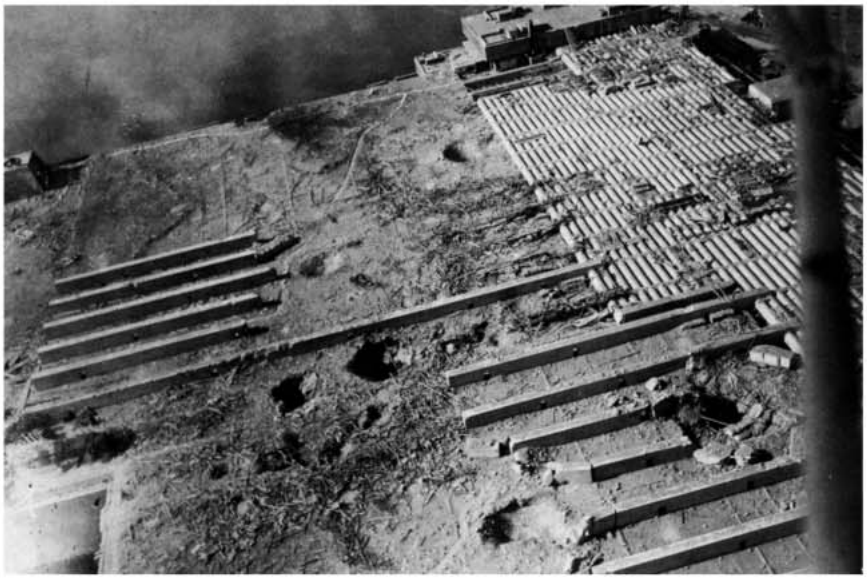
To increase the protection afforded by the roof a concrete superstructure, called 'Fangrost', was built as a bomb-trap above double or single layer roofs. This bomb-trap superstructure comprised concrete support walls about 2 metres high by 1.5 metres wide laid about 4.5 to 7.5 metres apart on the shelter roof parallel to the dividing walls of the pens below; across these support walls were laid concrete beams, about 1.5 metres square and the shape of an inverted 'U' (i.e. their tops being rounded), set about 0.3 metres apart. The beams were intended to detonate the bombs; the blast being contained in the 'explosion chamber' beneath. Only at Bordeaux was the greater part of the bomb-trap superstructure completed, over all the pens and half the services areas (at a lower level over the latter owing to the thinner roof). At La Pallice a length of it spanned Pens 6 and 7 for 45 metres or so. At Saint-Nazaire only Pens 1 to 5 were wholly protected. At Lorient Keroman III only the support walls

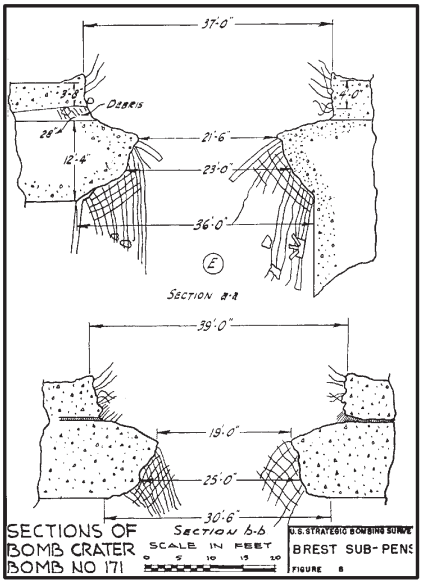


Flak positions were mounted to protect the pens — this is the quadruple 20mm AA gun position standing above the slipway on the roof of Keroman I at Lorient.



Left: **The effectiveness of the Fangrost graphically demonstrated at La Pallice. This is the roof section above Pen 6.** *Right:* **At Bordeaux a bomb hit the pre-cast beams before this part of the roof in the tower had been completed. The final thickness of the cleverly-designed bomb-absorbing superstructure can be seen in the completed section on the left.**

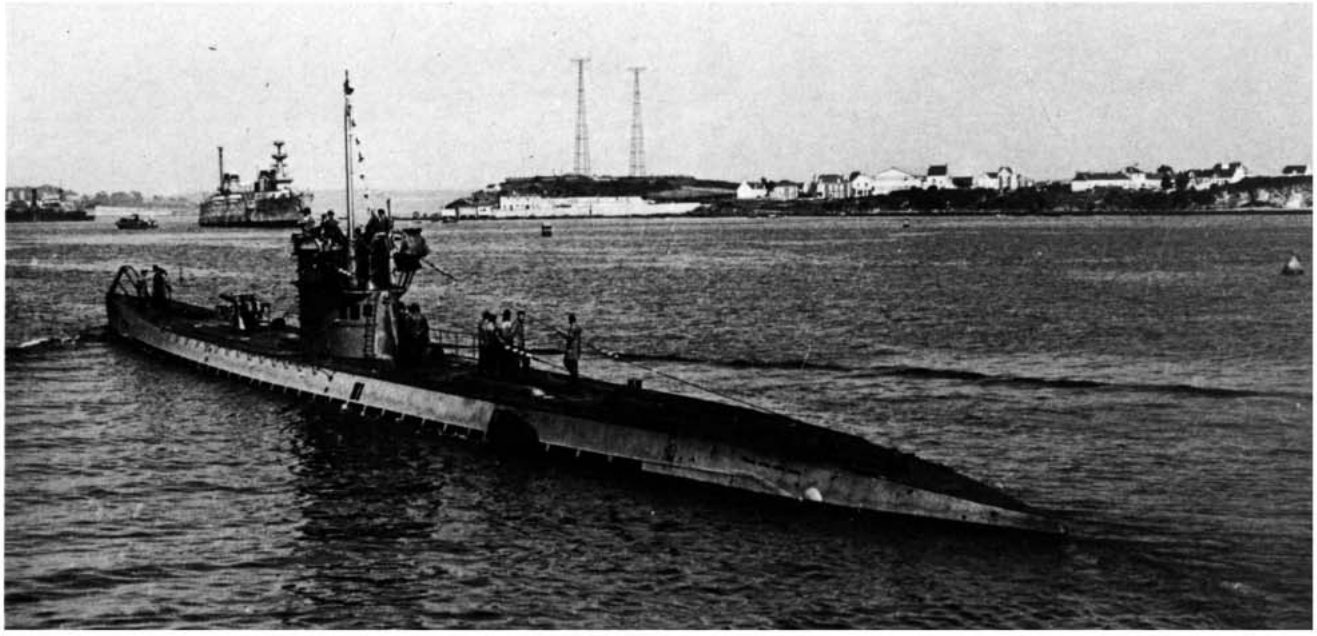




had been built before the end. The first parts of the base to be protected in this way were always the dry-dock pens.

It has sometimes been claimed that the immense thickness of these roofs made them quite impervious to any bomb, but certainly in instances where shelters without the bomb-trap superstructure were hit, their roofs were holed by the 12,000lb Tallboy bombs dropped by the RAF. When Lancasters of No. 617 Squadron attacked the base at Brest in August 1944, they put nine Tallboy bombs on the roof of the U-Bunker, one of which landed on the rear services area where there was only a single layer of concrete; the others smashing into a double layer about 6.20 metres thick, there being however no bomb-trap superstructure. The results differed from one bomb to another: five actually perforated the roof, leaving clean holes with average diameters of about 5 metres; the other four failed to perforate the roof but caused craters above and scab holes beneath. In an attack on La Pallice, No. 617 Squadron obtained several hits with Tallboys, four of them actually breaking through the roof.

Although the largest weapon in the armoury of the Royal Air Force was the 12,000lb HC (high capacity) blast bomb, its thin case made it useless against the reinforced concrete of the U-Bunkers, and the heaviest armour-piercing bomb was the 2,000-pounder. The Germans could therefore feel that the U-Boats were pretty safe from all forms of known aerial attack as their own largest armour-piercing bomb — the PC1400 — at 3,000lbs was not that much larger. However they bargained without the ingenuity of the Vickers aircraft designer, Barnes Wallis, who had already achieved notable success with designing bombs for specific purposes — the breaching of the Ruhr Dams *(see After the Battle No. 3)*. Another of his ideas for demolishing massive structures was an 'earthquake' bomb which would be dropped from at least 40,000 feet, exceed the speed of sound in its descent, and penetrate deep into the ground before exploding *beneath* the target, so shaking it down. As originally conceived, his ballistic bomb, with offset fins to make it twist like a bullet, was to weigh 22,000lbs — 10 tons — but as the range of the only aircraft that would be able to carry it, the Lancaster, would be severely restricted with such a load, a scaled down version was initially produced weighing 12,030lb, nicknamed the 'Tallboy'. Even then the Lancaster could only drop it from 18-20,000 feet, yet it still penetrated to 100 feet and turned out to be a remarkable weapon. However somewhere along the way the designer's conception to drop it *alongside* the target seems to have been forgotten and instead crews attempted to actually hit the target. In most, but not all, cases the Tallboys penetrated the roof but caused little other damage. *Above:* **Six direct hits by 617 Squadron on the partially-completed roof at Brest. None have struck the Fangrost so a test of its strength versus the Tallboy was not really established. (IWM)** *Right:* **Interior of Pen E which was penetrated with two hits, numbered 171 and 172 in the US Strategic Bombing Survey on Brest.**



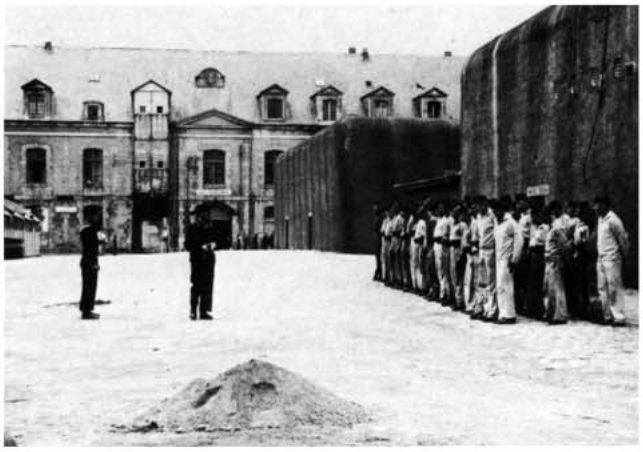
LORIENT

Another view of U-37 with its victory pennants as it crosses Pen Man Bay towards the former French Navy yards at Lorient. (ECP Armées)

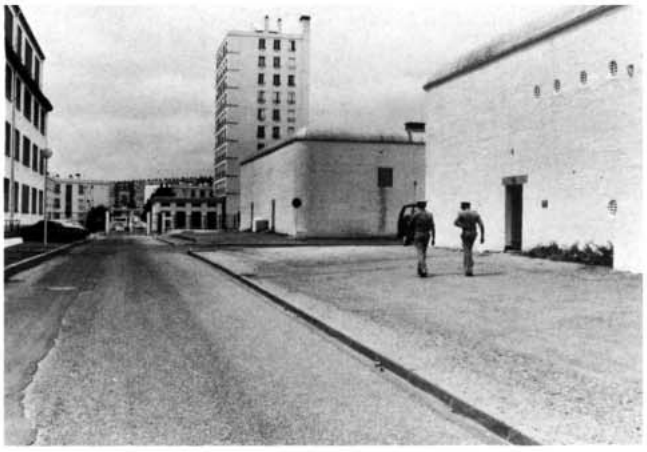
Only a few days after the capture of the French base on June 21, 1940, German engineers were at work on clearing the wreckage so that U-Boats could use the facilities as soon as possible, and the *U-30* under Kapitänleutnant Fritz-Julius Lemp entered Lorient on July 7 to resupply. With a handful of mooring posts and three dry-dock pens available in the Arsenal on the Scorff river, the former French base was far from attuned to the rhythm of the 'War in the Atlantic' and the Germans immediately started to adapt and enlarge it. Vizeadmiral Hans Stohwasser was appointed as Oberwerftdirektor and, while the Kriegsmarine used the existing facilities with the utmost efficiency, work was started on adapting these, and then on building a completely new base on the Keroman foreland. By 1944, not everything had been completed as planned but Lorient was without any doubt the largest and most intricate of all the U-Boat bases in France. Although there were only two U-Boat flotillas based there, it would seem likely that the base was able to provide technical assistance to the other flotillas — for example, in having dry-dock facilities for more than twice as many U-boats than any of the others. Of the 1,149 major U-Boat overhauls undertaken by the Kriegsmarine in the dockyards at Brest, Lorient, Saint-Nazaire, La Pallice and Bordeaux, 492 were carried out in the Lorient dockyards.

Lorient was the home of two submarine flotillas, the 2. U-Flotille, known as the 'Saltzwedel' Flotilla (after Rheinhold Saltzwedel, a famous U-Boat commander of the First World War), which arrived from Wilhelmshaven in June 1941, and the 10. U-Flotille created at Lorient in January 1942. At the beginning of 1943 the former was under the command of Korvettenkapitän Ernst Kals and the latter under Korvettenkapitän Günter Kuhnke. Lorient was then at the peak of its activity and there were as many as 28 U-Boats at the base at the same time!

As the first base actually in use on the Atlantic, Lorient had seen all but a few of



Now under German command, a new squad falls in before 'Haus Kleinschmidt', the former Caserne du Péristyle.



Unlike the old barracks, which has now been replaced by a modern building, the two bunkers have survived.

Above left: **Generalfeldmarschall Walter von Brauchitsch, then Oberbefehlshaber des Heeres, with his entourage outside the Hotel Gabriel, the Hafenkommandantur at Lorient, about to visit the base. His guides are two Vizeadmirals, the one facing the camera being Wilhelm Marschall, commander of Marinengruppenkommandos West, wearing the Pour le Mérite (the highest German decoration for Valour during the First World War) he was awarded when captain of the *UB-105*. (ECP Armées)** *Above right:* **Four decades later, once again the home of French Naval staff.**

Above left: **Walter von Brauchitsch, Wilhelm Marschall, and an officer who may be Generalleutnant Friedrich Paulus, then a member of the General Staff of the Army, sail down the Scorff river during the visit on November 20, 1940. Several U-Boats under camouflage netting can be seen lining the quay. (National Archives)** *Above right:* **Johan, the author's son, on the launch kindly made available to us by the French Navy for our comparison photography.**

the U-Boat aces on its quays or in its pens. The famous *U-47* of Korvettenkapitän Gunther Prien, the *U-99* of Kapitänleunant Otto Kretschmer and the *U-100* of Kapitänleutnant Joachim Schepke had each departed from Lorient during February 1941 on what turned out to be their last voyages: the *U-47* was sunk on March 7 by the old 1919 destroyer, HMS *Wolverine*, the *U-100* was sunk on March 17 by the destroyers HMS *Vanoc* and *Walker*, the latter sinking the *U-99* too that same day. The most successful U-Boat of the Second World War, the *U-48*, the second most successful (*U-99*), the third (*U-103*), the fourth (*U-124*), the fifth (*U-107*), the sixth (*U-123*) and the seventh (*U-37*) all operated from Lorient for a time. Between them, these seven U-Boats sank 313 ships.

A few Japanese submarines had visited their German counterparts at Lorient, among them the *I-29* and *I-30*. Kriegsmarine records reported the latter arriving at Lorient 'ohne Zwischenfall' — without incident — at midday on August 5, 1942. She would be back at Penang in Malaya on October 9, only to be lost four days later.

Admiral Karl Dönitz and his staff, whose B.d.U. headquarters were installed in Paris in September 1940, moved to Lorient in November, into a requisitioned house at Kernevel, a foreland facing Keroman. Kernevel was soon transformed into a fortress, with bunkers and gun positions everywhere for protection against attacks from both air and sea. After the raid on Saint-Nazaire and new air attacks the place was nonetheless considered too exposed and in March 1942 Hitler ordered the B.d.U. to move back to Paris.

Amiraglio Parona (left), commanding the Italian submarine force in the Atlantic, visiting Vizeadmiral Dönitz, the Befehlshaber der Unterseeboots (C-in-C U-Boats), at his HQ in Kernevel, a mansion on the western side of Le Ter facing the Keroman foreshore. Today it is the office of the Commandant de Marine Lorient, Amiral Bertrand Bonnavita, photography of which is not permitted. (National Archives)

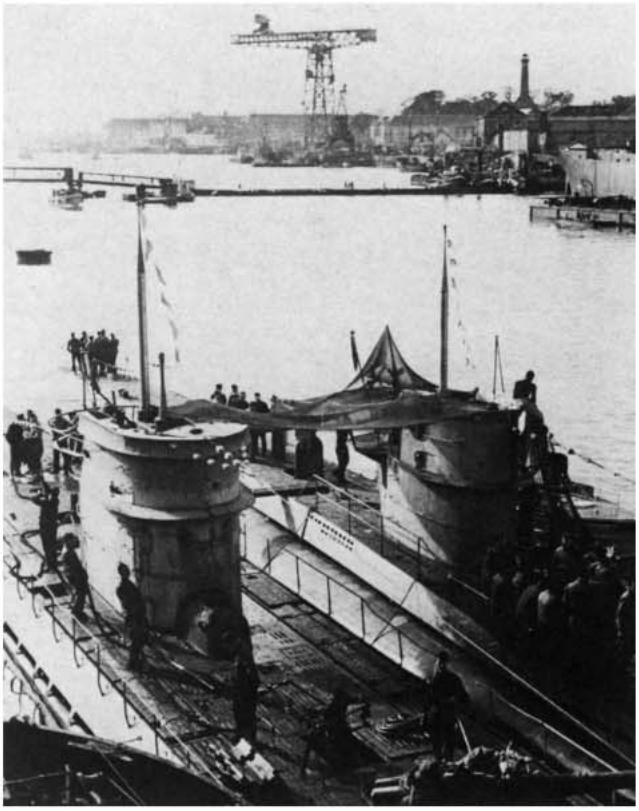
Two aces return to the Scorff. The *U-130* serving with the 2. U-Flotille at anchor on March 24, 1942. Standing in the conning tower with the white cap is her captain, Korvettenkapitän Ernst Kals, who later commanded the 2. U-Flotille. This U-Boat was a Type IXC built at Bremen by Deschimag and was sunk west of the Azores by the USN destroyer *Champlin* on March 12, 1943. (Bundesarchiv)

A few weeks later Oberleutnant zur See Reinhard Suhren of the *U-564* ties up after six attacks: the British *Ocean Venus* on May 3, the *Eclipse* on the 4th; the American *Deslisle* on the 5th and the *Ohioan* three days later; the Panamanian *Lubrafol* on the 9th and the Mexican *Potrero del Llano* on the 14th. The *U-564*, a Type VIIC, was bombed and sunk north-west of Cape Ortegal on June 14, 1943. (ECP Armées)

Because of its importance the Lorient area was well defended, particularly with a large number of Flak positions, and as 'Festung Lorient' its defences hastily took on CCB of the American 4th Armored Division when the division attacked the outskirts of the town on the morning of August 7, 1944. The day before, the RAF had launched another attack against the pens, aiming 146 tons of bombs at them. Most of the dock workers had been evacuated by coaches to Strasbourg as early as June 12 and the remainder were transferred by sea to Saint-Nazaire on July 8; from there they had gone to the Cognac airfield and were flown back to Germany. Most of the U-Boats evaded the trap during the first two weeks of August, the last one to leave being the *U-155* of Oberleutnant zur See Ludwig-Ferdinand von Friedeburg on September 5; the 2. U-Flotille was transferred to Norway and the 10. U-Flotille was disbanded in October when all U-Boat activity at Lorient ceased. Under the command of General Wilhelm Fahrmbacher, the surrounded 'Festung' was to hold out until May 8, 1945.

Two boats were found when the base was occupied after the 'Festung' surrender: *U-129*, a Type IXC boat which had been scuttled in front of Keroman III on August 18, 1944, and *U-123*, a Type IXB boat which lay within the protection of Pen K3 at Keroman I. The badly damaged *U-129* was scrapped; the *U-123*, in good shape, was commissioned by the French Navy in 1947 as S-10 *Blaison* and saw service until 1959.

Left: **Kapitänleutnant Günter Hessler, son-in-law of Dönitz and captain of *U-107*, arrives on board. A good view of the search and attack periscopes and the playing card insignia of the *U-107* which was a Type IXB built at Bremen by Deschimag. She went on to sink 38 ships worth a gross registered tonnage (GRT) of 217,751, the fifth most successful U-Boat, before she in turn was sent to the bottom west of La Rochelle on August 18, 1944. (Bundesarchiv)** *Right:* **No submarines in the Scorff today but the Arsenal is still bristling with activity. Note the Scorff U-Bunker in the right background.**



Left: **Number 7 submarine in the U-Boat 'top twenty' was Kapitänleutnant Nicolai Clausen's *U-37* 'Westward Ho', seen here on the left beside an unidentified Type VII. She was a Type IXA of which eight were built before the war by Deschimag at Bremen. She served with the 2. U-Flotille and claimed 54 ships sunk (200,222 GRT) before ending her days when scuttled in Eckernförde on May 5, 1945. (ECP Armees)** *Right:* **The old lighthouse survived the heavy battering suffered by Lorient later in the war but the crane is a replacement for the one destroyed in 1944.**

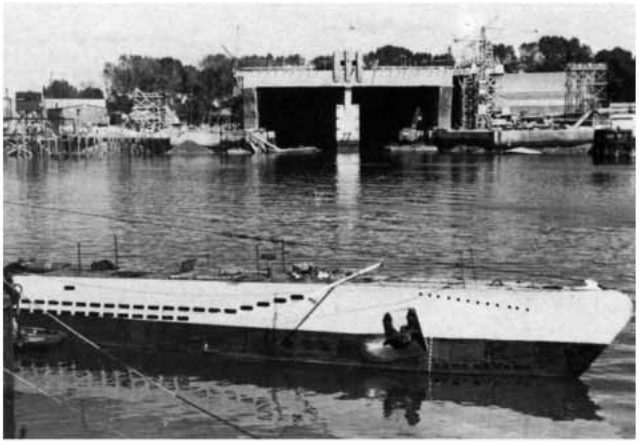
Construction, First Phase: the 'Dom' bunkers and the Scorff bunker

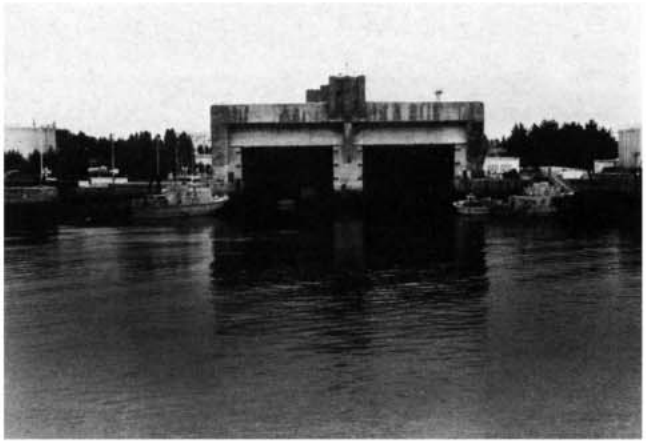
Under the vigorous leadership of Konteradmiral Walter Matthiae, who replaced Hans Stohwasser as Oberwerftdirektor in mid-September of 1940, the existing facilities of Lorient dockyards were soon put to full use by the Kriegsmarine, but the U-Boats had to be serviced in the open air, either in the dry-docks of the Arsenal or aground on one of the keel-block lines beside a slipway. Neither afforded any protection at all, and despite some attempts at camouflage under tarpaulins, the hazardousness of the situation became still more apparent after the first air raid by the RAF on September 27, 1940.

The 'Dom' bunkers were built to shelter two of six keel-block lines beside the slipway at Keroman — U-Boats being brought aground via the slipway and directed by turntable to one of the lines radiating from it. They resembled the bunkers that were being built in the Pas de Calais for the cross-Channel railway guns; their name stemming from their pointed shape — 'Dom' being the German for 'Cathedral'; their steeply sloping sides being intended to deflect bombs and cause them to explode alongside. Externally they measured 84 metres in length, 16 metres in width and were 25 metres high.

Not only did they provide protection for a mere two U-boats (one each), but these were restricted to the small Type II vessel by the fact that the 'basic' ocean-going Type VII was too long and too heavy for the existing slipway and turntable, whose weight limit was about 400 tons; and the bunkers, at 60 metres long inside, were not built to take anything larger. This was a serious limitation, for the Type II U-boat was merely a coastal vessel: its short radius of action (3,500 miles for the later Type IID boats) and its weak striking power (only six torpedoes) made it unfit for the Atlantic battles.

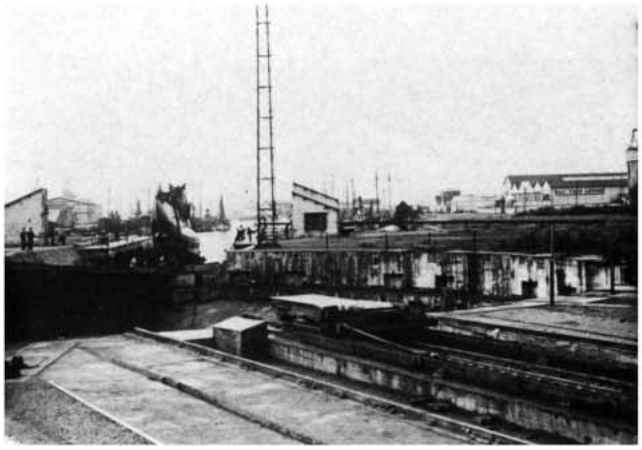
The moorings on the Scorff river in the Arsenal were highly exposed and a U-Bunker was built on the river bank to provide protected ones: this tidal shelter was 145 metres wide, 51 metres long and 15 metres high, and had two pens, 17.5 metres wide and 99.5 metres long, each being able to shelter two U-Boats, including the larger Type VII or Type IX boats. The roof was 3.5 metres thick; it had an odd-looking structure above the entrances to the pens, the purpose of which could only have been decorative.

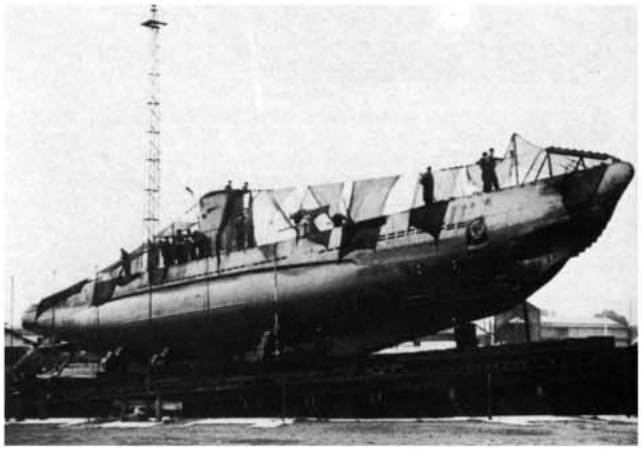




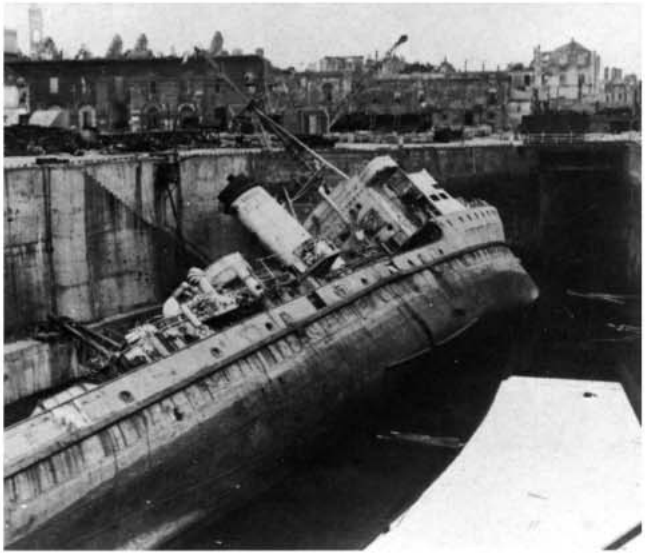
Left: **The Scorff U-Bunker, able to berth four boats at a time, pictured from the western bank of the river looking across the deck of a Type VII, riding somewhat high in the water.**

Comparing with the photograph on page 6, the work appears more advanced but, as our comparison shows, the shelter had yet to receive the second stage of roof protection. (ECP Armées)





The Bassin Long (see map page 10) was already provided with a series of six repairing berths radiating from a central turntable onto which vessels could be run from the slipway which leads up from the basin. *Top left:* **Here a U-Boat Type II is being winched up the ramp to the turntable.** *Above right:* **The massive turntable was able to tilt to align with the angle of the slipway.** *Above left:* **Once on the turntable, the submarine could then be directed to one of the six repair sidings. Although a vain attempt has been made here to camouflage the stranded U-Boat, it was still very vulnerable to air attack. Bomb-proof shelters, called 'Dom' bunkers after their cathedral-like shape, were constructed to cover two of the berths. (ECP Armées)** *Below:* **Our comparison shows the south-eastern bunker and a landing craft in front of the south-western berth.**



Another of the 'open air' facilities at Lorient was the dry-dock ('dr' on the map on page 10) now the Forme 3. *Above left:* **Taken in 1941, this picture (like all those credited 'ECP Armées' captured by the French Army in 1945) shows a Type VII and IX being serviced, again with an attempt having been made at camouflage although the long-term solution to protection from attack was the construction of the Keroman U-Bunkers.** *Above right:* **By 1945 the dock area was a shambles with most of the buildings in ruins. The vessel is an M-Boat Type 40. (ECP Armées)** *Below:* **At the time our photograph was taken in July 1985 the sloop *D'Estienne d'Orve* provided a fitting comparison.**

Construction, Second Phase: Keroman I and Keroman II

It had been obvious from the beginning that the construction of the 'Dom' bunkers and the Scorff bunker was only a temporary solution which was quite unable to cope with the larger ocean-going submarines and the expected growth in activity of the base, and at the end of 1940 it was decided to build new facilities on the Keroman foreland consisting of a sheltered slipway and pens for the larger U-boats to be brought ashore and distributed among them.

Construction of the first shelter, Keroman I, started on February 2, 1941, followed three months later by a start being made on Keroman II. In spite of the nuisance caused by air attacks by British bombers (on May 7 for example 200 workers were killed in such a raid) the work proceeded very efficiently and the first U-Boat was brought ashore on August 1, 1941, the whole complex being officially taken over by the Kriegsmarine on December 20. The facilities were suitable for the Type VII boats and most of the Type IX, which made up the bulk of the U-boat force, though the Type IXD and XB were slightly too long.

Keroman I was 119.5 metres long, 85 metres wide and 18.5 metres high; it housed five pens numbered K1 to K5. The slipway pen, built alongside of K1, brought the total width of Keroman I to 120 metres; this pen jutted into the water beyond the rear of the shelter by about 71 metres.

Keroman II was built facing Keroman I, on the other side of an 87-metre-wide esplanade; it was 128 metres long, 138 metres wide and 18.5 metres high. It housed seven pens (K6 to K12) identical to those of Keroman I, plus an eighth pen, K6A, at the end of the shelter next to K6 (opposite the slipway pen), to garage the two traversers that were used in transporting the U-boats when on shore.

The two bunkers had the same general organisation, with the pens — 15 metres wide and able to house boats up to 82 metres long and 10 metres high — fronting the esplanade, and at the back of them, behind a 5-metre-wide passage running the width of the building, a rear services area providing workshops. The pen entrances could be protected by the closure of pairs of armoured doors a metre thick. The entrance at the top of the slipway pen was unprotected as its triple sliding-down shutters were not installed, and nor was a mobile screen available which was to have been hauled across to protect the pulleys and part of the slipway trolley which protruded below the bottom shutters.

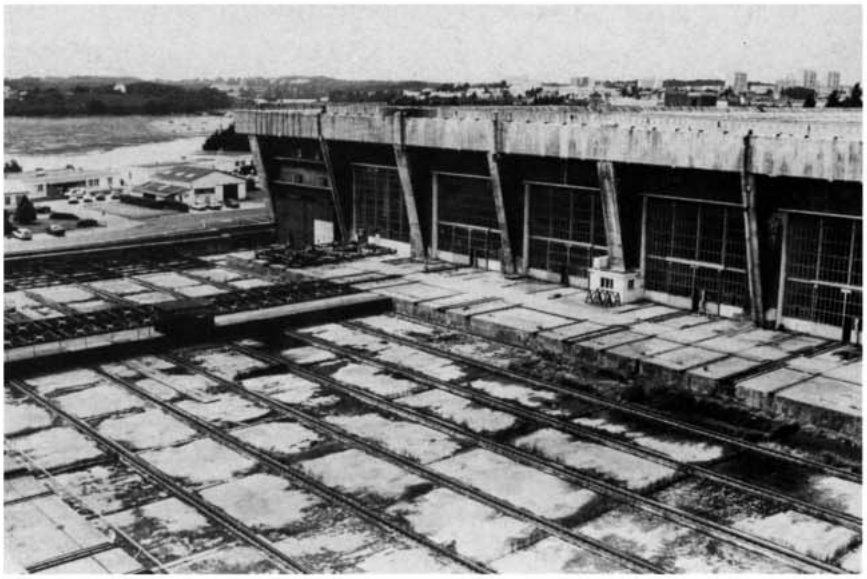
'Built by the order of the Führer . . .' stated this plaque at Lorient, but where is it today? (Bundesarchiv)

The bunker roofs consisted only of the original layer, 3.5 metres thick. Only a few lengths of support walls for the bomb-trap superstructure were completed on the lower slipway roof. Three pits for 20mm Flak guns were built on Keroman I, two of these above the entrance to the slipway.

Both bunkers had large additions at the rear: an electricity power station, 82 metres wide and 25 metres long, behind Keroman I, and a bunker, 60 metres wide and 20 metres long, housing the electrical transformer and some fuel tanks, behind Keroman II. In a smaller addition built beside the slipway, on the south-western side of Keroman I, there was a seven-metre-high tank for training U-Boat crews in the use of individual escape apparatus. The upper levels of the traversers' garage pen, K6A, in Keroman II were arranged to provide accomodation for a thousand men.

Construction of the dry-dock facilities of the standard pattern Keroman III U-Bunker was well under way when work began anew at Keroman I and II, as Keroman IV. This project for extending I and II by twelve pens each however apparently evolved into some-

Above: **This shot, taken from the roof of Keroman I looking westwards, shows Pens K10 (on the right) along as far as K6. The pen on the extreme left, K6A, was used to park the moveable transverser which could be driven sideways on an eight-rail track to position a U-Boat in front of its appropriate pen before the cradle tractor moved it inside. One tractor can be seen on the transverser and another in front of K7. (Bundesarchiv)** *Below:* **It's almost 'all systems go' at Lorient today; but for the weeds and the missing tractors, the transverser awaits its next U-Boat.**



thing different, and anyway the work did not get beyond a preliminary stage, whilst priority in the allocation of scarce resources was given to Keroman III. In the same way, the comparatively more complex and vulnerable shore-based facilities never received a second layer to their roofs.

The Gustavsburg factory of the well-known M.A.N. company designed and built the system for bringing the U-boats ashore and into the pens — a process which, though relatively straightforward considering the size and weight of the loads moved, is least complicated to describe if considered in phases:

Phase one: the U-Boat entered the slipway, the dock gate was closed and, with part of the water pumped out, the boat was manoeuvred with the help of an overhead travelling crane into a cradle mounted on a wheeled trolley (45 metres long and 11 metres wide) which had been lowered down the slipway on four rails set in the slope.

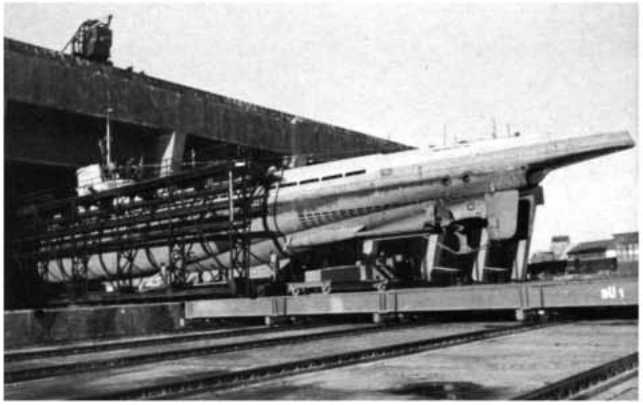
Phase two: the trolley, with the U-Boat secured in the cradle above, was winched up the 1-in-10, 159-metre-long, slope of the slipway by a 220-horsepower electrically powered windlass.

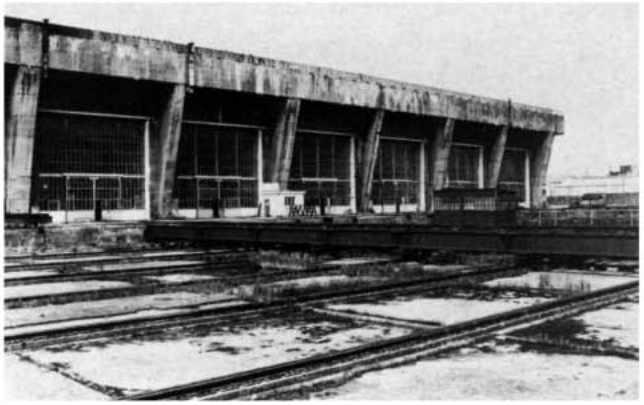
Phase three: at the top of the slipway, the cradle — an independent wheeled unit running on a four-rail track on the bed of the trolley and hauled by a 25-horsepower electric traction unit operating on a rack-rail system — moved off with its U-Boat from the trolley and onto an equivalent four-rail track on the bed of a traverser.

Phase four: this 32-wheel mobile platform (driven through 16 of them by a 40-horsepower electric motor), 48 metres long by 13 metres wide, travelled laterally on an eight-rail track down the centre of the esplanade between the two bunkers. At right angles to its 121-metre-long track, four-rail feeder tracks for the mobile cradle led into each of the pens — the feeders being at a raised level to align with the cradle's track on the bed of the traverser.

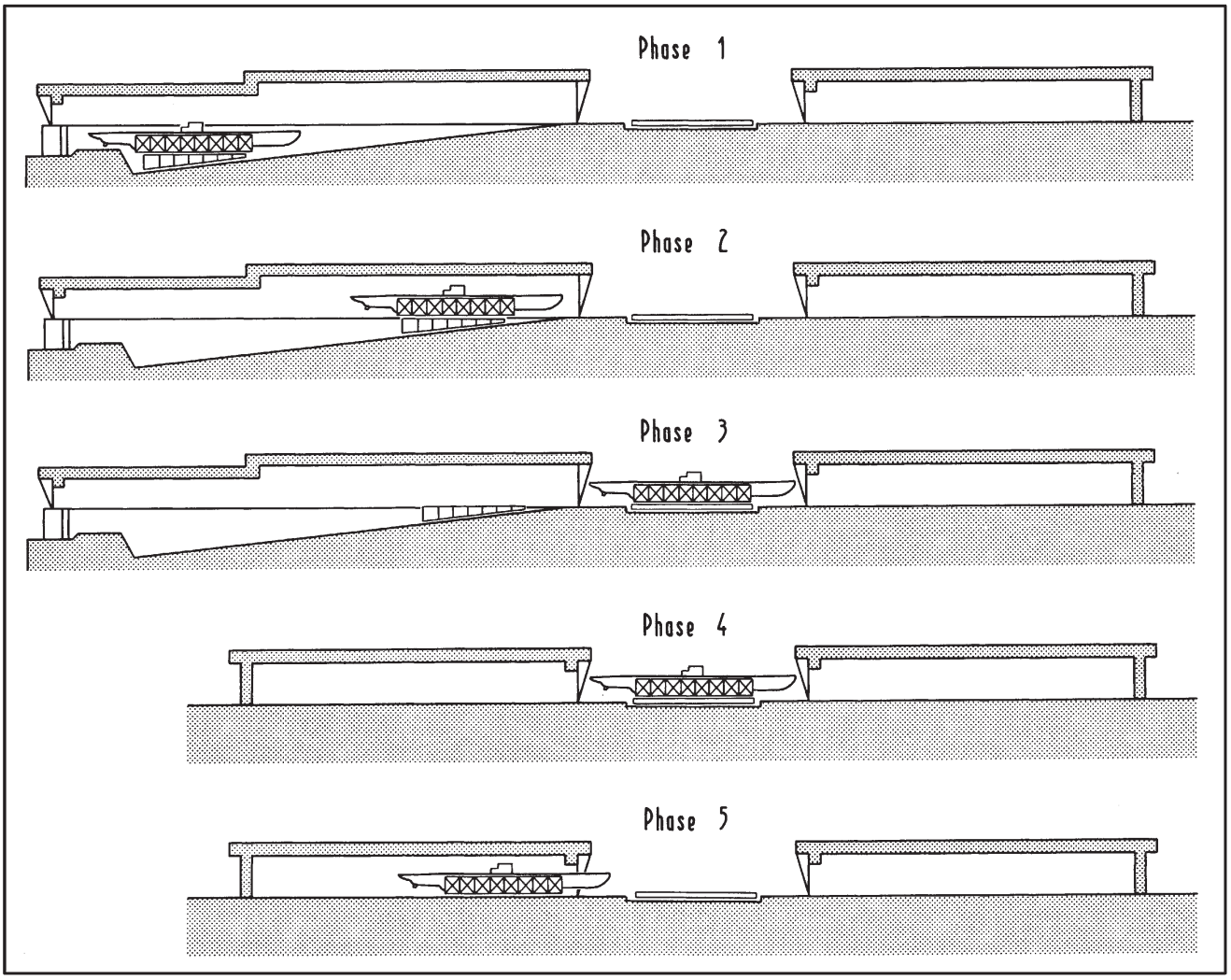
Phase five: the traverser transported the cradle with its U-Boat sideways and stopped before the entrance to the chosen pen of either Keroman I on one side or Keroman II on the other. The cradle moved off the traverser and onto its feeder track to take the U-Boat inside. The traction unit was then detached from the cradle and moved out, the pen doors were shut and work started on the U-Boat.

The reverse applied for returning a U-boat to the water. At maximum speed and if everything went without a hitch, it was reckoned that the whole process of bringing a U-boat ashore and into the farthest pen (K5 in Keroman I or K12 in Keroman II) could be accomplished in an hour. This





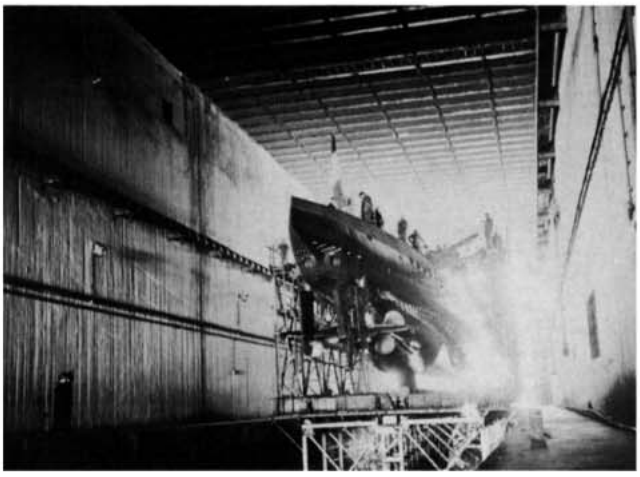
Left: **There were two transversers called BÜ1 and BÜ2. Here the former is being used to move a Type IX back to the sea after a refit in Pen K6. As the height of the ceiling of the bunker did not permit the extraction of the periscope once the U-Boat was inside, a small crane ran along the edge of the roof to remove or replace it beforehand. This is the operation which is taking place in this picture. (Bundesarchiv)** *Right:* **Today the metre-thick armoured doors have been removed and replaced with ones more suited to the present day use of the pens of Keroman II as workshops.**



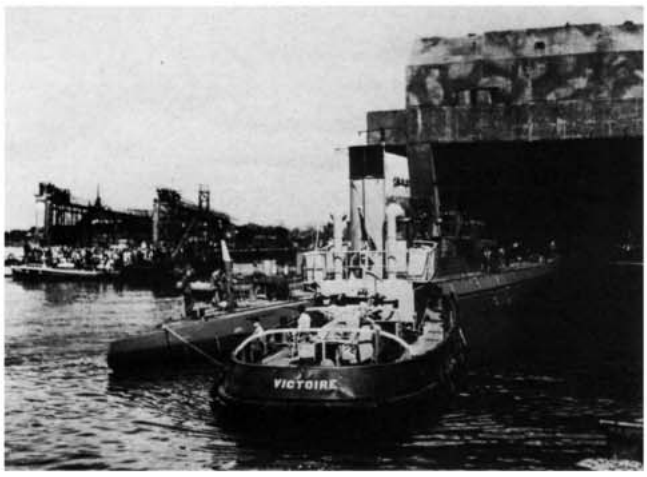
assumed fifteen minutes for phase one, fifteen for phase two, ten for phase three, ten for phase four and ten for phase five. In practice, it usually took a couple of hours.

There were twelve cradles available and two cradle traction units. The two traversers fitted one behind the other in their garage pen at one end of Keroman II for protection against air attacks. They were carried in and out on low mobile platforms, 49 metres long by 13 metres wide, which operated on a two-rail, 188-metre-long track serving the pen; the platforms being powered by a 9-horsepower electric motor operating on a rack system. The platforms' track ran at right angles to the end of the traverser's eight-line track, at a slightly lower level so that the bed of the platform, with its equivalent eight-line track, could be positioned to align with the end of the traversers', for the traversers to travel on and off the platform on their way to and from the pen.

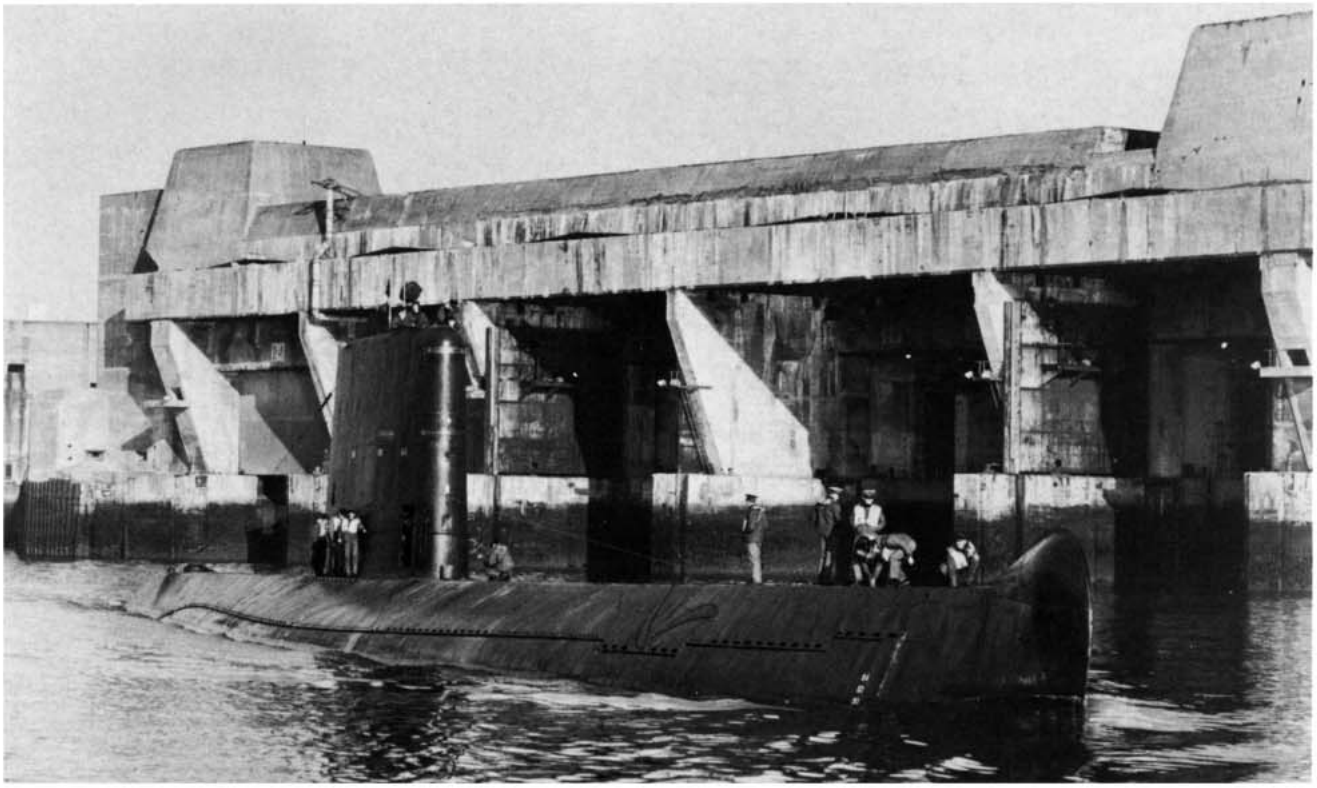
The five stages of the beaching operation at the Lorient Keroman submarine pen complex: (1) The U-Boat enters the dry dock and, as the water is pumped out, it settles on the cradle. (2) The trolley is winched up the slipway. (3) Reaching the top, the cradle is moved onto the transverser. (4) The transverser moves laterally to an empty pen. (5) The cradle rolls off the transverser to take the submarine inside.



Lorient was bypassed in the advance across France and the 15,000-man garrison were bottled up until the final surrender in May 1945 *(see After the Battle No. 48)*. When the US 66th Infantry Division entered the port they found the *U-123*, a Type IXB launched in 1940 at Bremen, lying high and dry in Pen K3.



Refitted by the French, it joined their navy as the S-10 *Blaison* in 1947 before being scrapped ten years later. These pictures were taken when its refit was completed and it was taken back down the slipway to its natural element — helped by a suitably named tug. (ECP Armées)

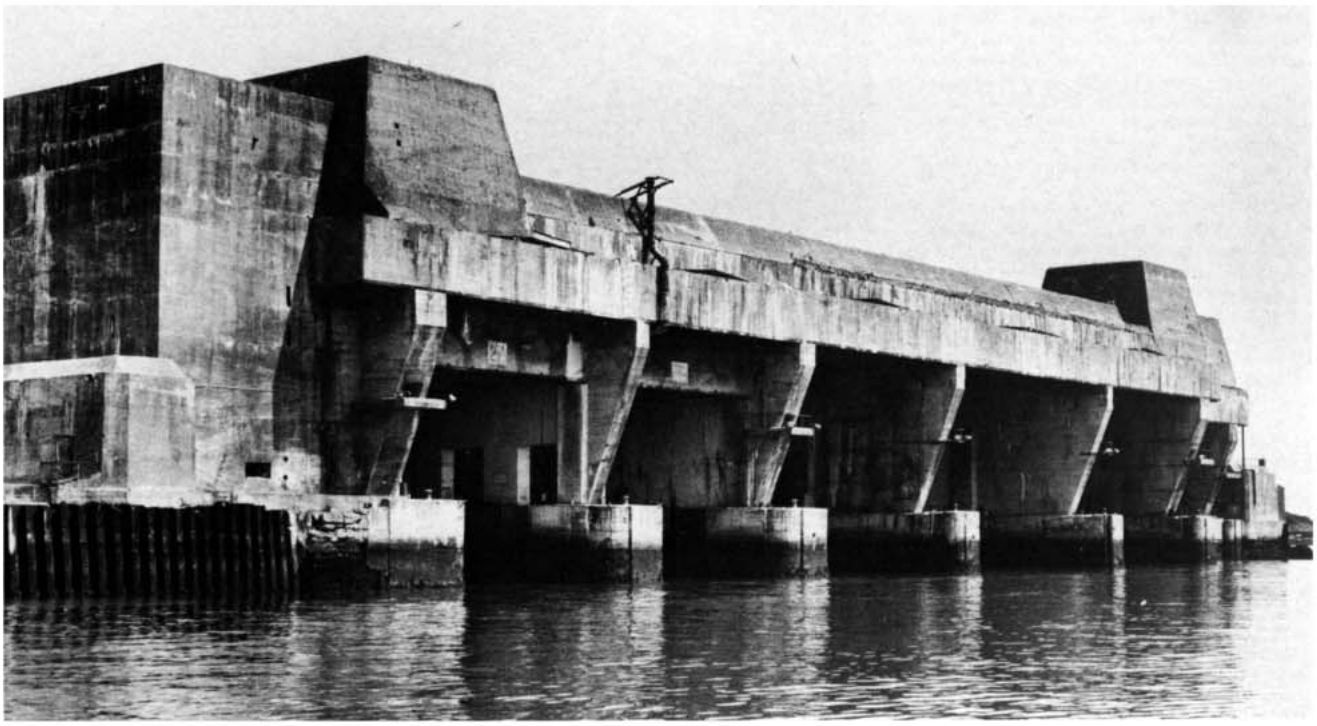


Facing the sea, the dry-dock facilities of Keroman III dispensed with the need for the elaborate transporter system of the two land-based shelters. Only four pens were fully working as dry docks by the end of the war and their berths, K13-K14, K15-K16, K23 and K24, are still used by the French Navy today. The picture *above* shows not a U-Boat but a derivative of the Type XXI: the Narval Class S-632 *Marsouin* launched in 1955 at Cherbourg. Lieutenant de Vaisseau Camille Sellier sets out on a new voyage with her from Lorient on January 18, 1975. (ECP Armées) *Below:* Keroman III ten years on, the only change being the removal of the armoured doors in 1976.

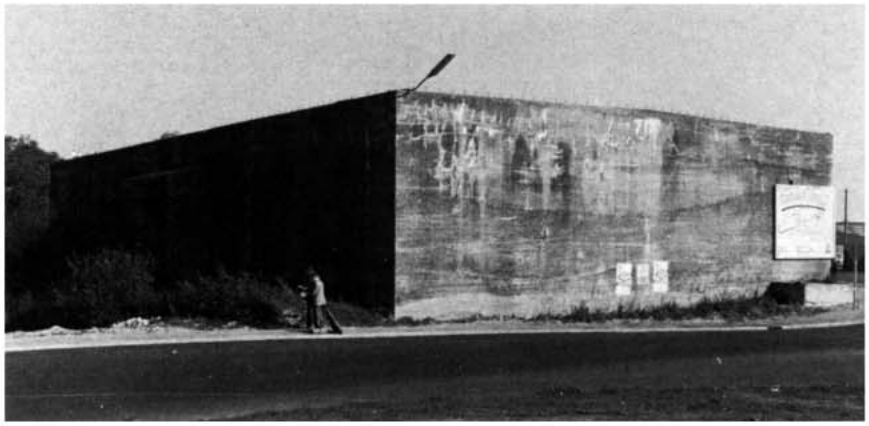
Construction, Third Phase: Keroman III

Construction of Keroman III started in October 1941 and the shelter was made available at the very beginning of 1943, becoming fully operational in May of that year. With a total area of nearly 24,000 squares metres, it was the largest of the bunkers built at Lorient: 170 metres wide, 138 metres long and 20 metres high. The roof above the pens comprised the two layers and was 6.40 metres thick above some and 7.40 metres above others; above the rear services area it was only one layer thick — 3.60 metres. This inferior protection was accepted and construction of the bomb-trap superstructure was begun for the whole roof: most of the support walls were built, but very few of the beams were laid, only above the thinner rear area roof. Interestingly, the superstructure at the rear was laid in the opposite direction to elsewhere — the support walls on the roof running diagonal to the pen walls below instead of along the line of them, with the beams running parallel. Three pits for 20mm Flak guns were sited above the pens at either end of the shelter and the entrance to berth K17.

Moored in front of the shelter were two ships, the *Crapaud* and the *Strasbourg* (the latter the German First World War light cruiser *Regensburg* which passed to France in 1918), which were fitted with tall masts and



'Torpedos Los!' Without protection for its ammunition, all the efforts expended on the Keroman shelters would have been wasted, so six torpedo bunkers were built to the north-west at Kerolay to house the Torpedoarsenal. *Above:* **Here Dönitz inspects construction workers of the OT during the inauguration ceremony. (ECP Armées)** *Below:* **Today five of the bunkers are still is use by the French Navy; this is the sixth called 'Jaguar', the only one which could be photographed.**



sprouted barrage balloons to provide protection against air launched torpedoes or bombs dropped by low-flying aircraft.

Keroman III had seven dry-dock pens but not all of the closing and pumping systems had been installed when work had to stop; it would seem that only the two pens at either end were actually operational as dry-docks, and these are still used as such today by the French Navy!

The first two pens were 82 metres long and 17 metres wide; they provided two dry berths each, K13-K14 and K15-K16. Their entrances were closed by submersible caisson and they shared the pumping system installed between them. The gap between the roof and quay level could be closed off by protective doors, and another pair of protective doors took care of the gap below that.

The third pen, 102 metres long and 17 metres wide, provided two dry berths, K17 and K18. The entrance caisson was present and the pumping system had been installed on one side of the pen but had yet to be completed, so the pen is unlikely to have been used as a dry-dock.

The central pen provided three dry berths, K19, K19A and K20, and was 103 metres long by 22.5 metres wide. Because of the situation regarding the pumping systems, plus the fact that its submersible caisson might not have been available, it can only be regarded as having been a 'possible' dry-dock pen. This pen had no entrance protection.

The fifth pen, similar to the third, was 102 metres long and 17 metres wide, with dry berths K21 and K22.

The last two pens were dry-dock pens with dock-gates; they were 103 metres long and 12 metres wide and provided only one berth each, K23 and K24. A shared pumping system was installed between them. Their upper entrances could be closed off by protective doors which swung down from above.

Bristling with anti-aircraft defences, when 'Festung Lorient' surrendered in 1945, a count revealed no less than two hundred 20mm guns, nine 75mm, eighteen 88mm, forty-three 105mm, twelve twin 105mm and five 128mm! Besides the bunkers associated with air defence, there were a number of smaller bunkers in the Arsenal on the Scorff river and in the Keroman complex: for defence, storage, electricity, headquarters, communications, accommodation, etc. A group of six bunkers, each 40 by 23.4 metres, were built near Kerolay to the north-west of Keroman to house the 'Torpedoarsenal'; these bunkers were sited along a winding track and were given the picturesque names of 'Jaguar', 'Iltis', 'Leopard', 'Luchs', 'Tiger' and 'Wolf', and except for the one-time 'Jaguar', which is now used by the Lorient municipal authorities for storing stands and barriers for festive occasions, the others are still in use as an 'Arsenal Torpilles'.

As Lorient is still an active French naval base, and with a number of the bunkers in use in their original role, the former U-Boat base is undoubtedly the best preserved. The Scorff bunker pens are now used as moorings for surface craft, and its rear services area is still used as a workshop. The pens in Keroman II have been converted into workshops. The slipway/cradle/traverser system is still in use at Keroman I: the K4 pen is still used to service and repair submarines, and three other pens are used for the construction of fibreglass boats which are 'launched' via the original system. Keroman III is still oper-

The Keroman complex under the eagle eye of No. 541 Squadron on July 24, 1944. No U-Boats are visible but the two French ships, the *Strasbourg* and *Crapaud*, used for defence and the tethering of barrage balloons, can be seen in front of Keroman III. By this time the Dombunkers were obviously no longer in use as the access basin has been sealed off with an earth dam. (Crown Copyright/Keele University)

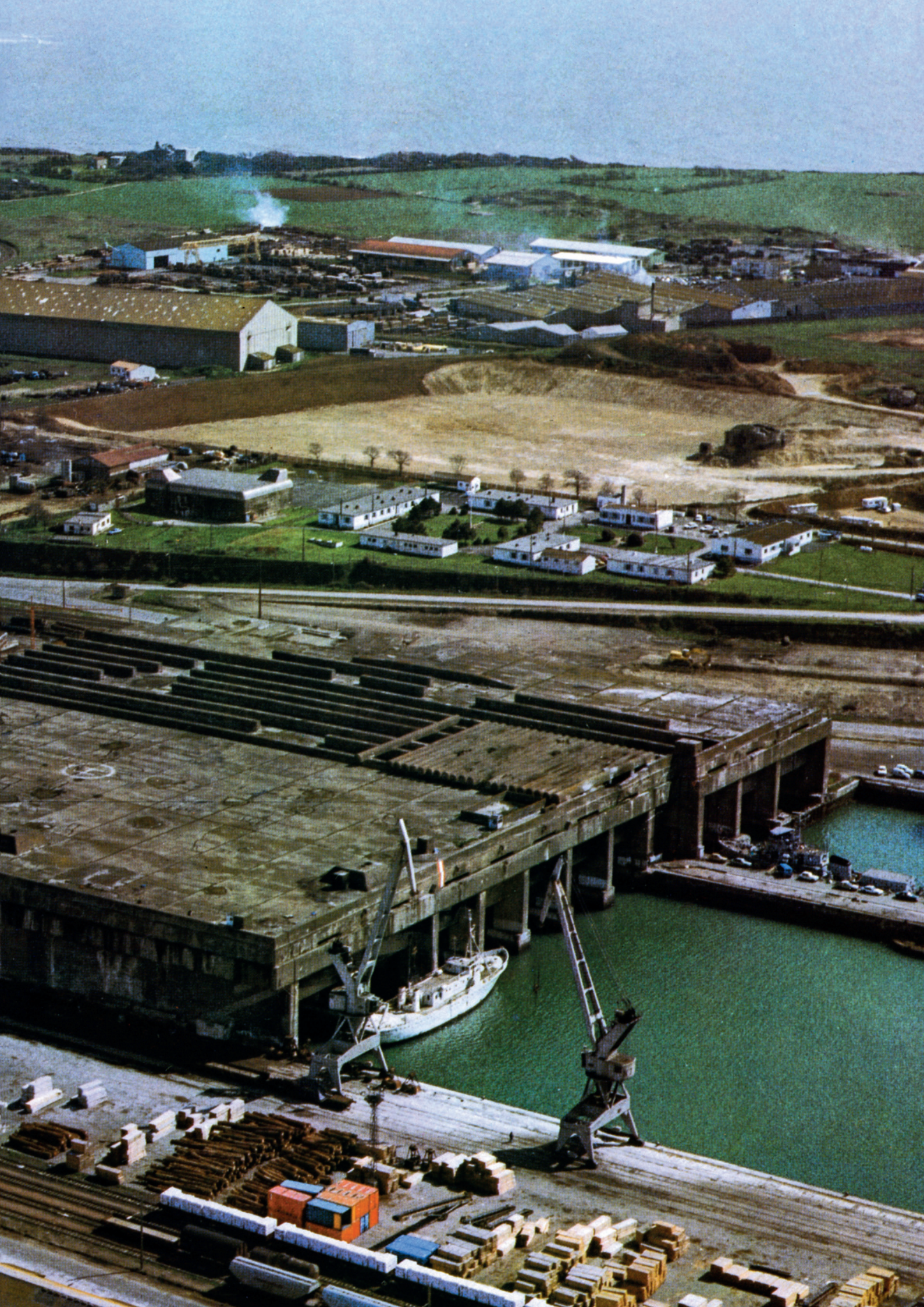
ational and four pens are currently used to dry dock non-nuclear submarines of the French Navy. The torpedo storage bunkers that are still used as such by the French Navy are obviously 'off limits' . . . the former 'Jaguar' can easily be seen beside the road near the entrance to the naval yard at Keroman. At Kernevel, the villa which housed the B.d.U. from the end of 1940 to the beginning of 1942 is still the residence of the admiral commanding the naval base at Lorient.

The 'Dom' bunkers and the related slipway and turntable are not in the Navy Yards and can be approached without difficulty; one is disused, the other is used for boat building by Chantiers de la Perriére. It is not possible to visit the Arsenal on the Scorff river, but official conducted visits to the Keroman complex take place from mid-June to mid-September, and about 100,000 people a year take advantage of these. As the base is still active, taking pictures is forbidden during these visits and obviously restrictions are applied as to who is allowed in, so anyone from abroad contemplating going to Lorient would be wise to enquire of the French naval authorities beforehand. The Ter river, which runs just in front of Keroman, is not a restricted area, and from a boat one would have a nice view of the three bunkers there — but you would be asking for trouble if you dropped anchor and got busy with a camera!

Port Louis Bay seen from the roof of Keroman I today. The slipway entrance lies on the right and the corner of Keroman III on the left. The wrecks of the *Strasbourg* and *Crapaud*, sunk in 1945, can still be seen. In the background the Kerneval peninsula and Dönitz's former HQ.

One of the massive Dombunkers, the entrance now bricked up and no longer in use.

Combined German/French sign fading away on Keroman I: 'Entry Forbidden! Do not dispose of rubbish in the slipway'.



Home at last. Its patrol over, *U-258* under Kapitänleutnant Wilhelm von Mässenhausen noses its way slowly across the basin towards the U-Bunker at La Pallice — the base of the 3. U-Flotille. The submarine (a Type VIIC from Bremer Vulkan) only had six months to live when this picture was taken at the end of 1942: she was depth-charged by No. 120 Squadron, RAF, on May 20 the following year in the North Atlantic. (Bundesarchiv)

LA PALLICE

La Pallice was the home base of the 3. U-Flotille, the 'Lohs' Flotilla (named after Johannes Lohs, a famous U-Boat commander of the First World War), which officially moved in from Kiel in October 1941. It should be pointed out that a Flotilla was in charge of its U-Boats only when they entered coastal waters and was thus mainly involved with repair and resupply matters. When at sea U-Boats came under the operational control of the B.d.U. (Commander-in-Chief U-Boats) and a number of U-Boats operated from the French Atlantic ports for nearly a year before the first flotilla staff was actually moved there. At the beginning of 1943 the 3. U-Flotille was under the command of Korvettenkapitän Richard Zapp.

Among the U-Boats based at La Pallice were those commanded by such aces as Kapitänleutnant Erich Cremer of the *U-333*, Kapitänleutnant Siegfried von Forstner of the *U-402*, Kapitänleutnant Heinz-Otto Schultze of the *U-432*, Kapitänleutnant Heinz Franke of the *U-262* . . .

When the Allied armies advanced into France after the succesful break-out in Normandy, the complex of defences, services and supplies assembled around the base made this area well prepared for undergoing a siege, and La Rochelle was made a 'Festung'. But thus isolated, the base was of no use for U-Boats and the 3. U-Flotille withdrew to Norway. Their departure had been hastened by a renewal of Allied bombing, the RAF dropping no less than 466 tons of bombs, Tallboys among them, during August in five raids on the La Pallice shelter. Under the command of Vizeadmiral Ernst Schirlitz, 'Festung La Rochelle' was not to surrender until May 8, 1945. When the U-Boat base was entered, the *U-766* was found in one of the pens; a Type VIIC built at Wilhelmshaven, it was commissioned by the French Navy in 1947 as the S-09 *Laubie*, continuing in service until 1963.

The base was built on the eastern side of the basin of La Pallice, just to the west of La Rochelle; this basin, some 600 metres by 200 metres, was linked to the sea by two parallel locks, one of them protected beneath a concrete shelter about 162 metres long, 25 metres wide and 14 metres high, with three wells for 20mm Flak guns built into the western side of its roof.

The U-Boat shelter was 195 metres wide, 165 metres long and 19 metres high; to its rear (the eastern side) two buildings were added: the 'tower', 30 by 50 metres, 25

Our comparison shows how a jetty and three additional pens were added at a later stage at the southern end.

Entry to the Bassin à Flot was via this lock — a swing bridge crossing being provided for vehicular traffic to pass into the dock area. Another picture from the series featuring *U-258*, it was taken on October 27, 1942 before construction started on a new bomb-proof lock, visible in our comparison a few yards to the south. (Bundesarchiv)

metres high, and the 'annex', 85 by 20 metres, 19 metres high. The whole shelter complex, for which 425,000 cubic metres of concrete were poured, covered an area of about 35,000 square metres.

The roof thickness varied from 7.30 metres above Pens 1 to 5, to 6.50 metres above Pens 6 to 10 except for the rear part of Pen 10 where the second layer was in the process of being poured when all work stopped. Work on the bomb-trap superstructure had been started — there were several stretches of support walls — but was completed only above Pens 6 and 7 for about 45 metres.

The shelter comprised ten pens:

Pens 1 and 2: 92.50 metres long and about 17 metres wide, which provided two berths each (1A-1B, 2A-2B), their entrances being protected by armoured double doors which extended to 4 metres below quay level.

Pens 3, 4, 5, 6 and 7: dry docks, 92.50 metres long and about 11 metres wide, closed off by submersible caisson and protected by twin shutters.

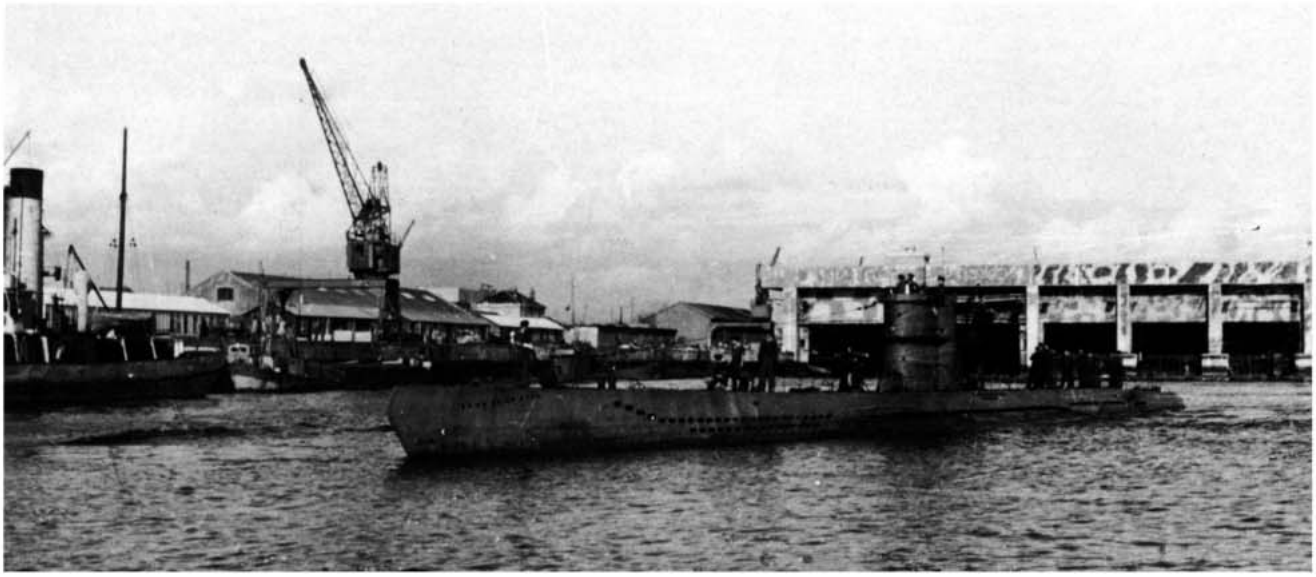
Pens 8 and 9: dry docks much the same as Pens 3 to 7 but 100 metres long.

Pen 10: intended as a dry dock, sharing its pumping system with Pen 9. 100 metres long and about 16 metres wide. Not fitted out when the war ended, having neither caisson nor protective shutters.

Two weeks previously on October 10 Kapitänleutnant Heinz-Otto Schulze returned in *U-432* from an Atlantic patrol on which the American merchantman *Pennmar* was sunk. The submarine was itself despatched by the French corvette *Aconit* on March 11, 1943. (Bundesarchiv)

A Type VII enters Pen 2 sometime before the additional reinforcing layer was added to the roof. (Bundesarchiv)

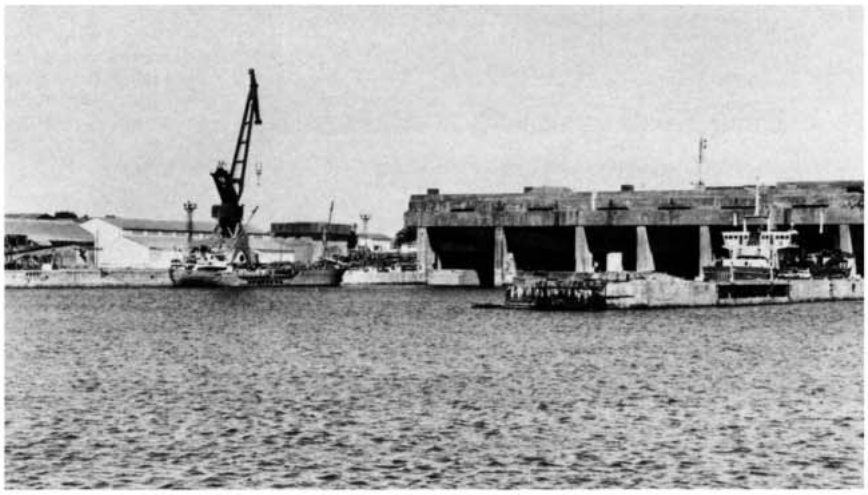
Note also that the camouflage was later changed to a splinter pattern — still visible on the concrete today.



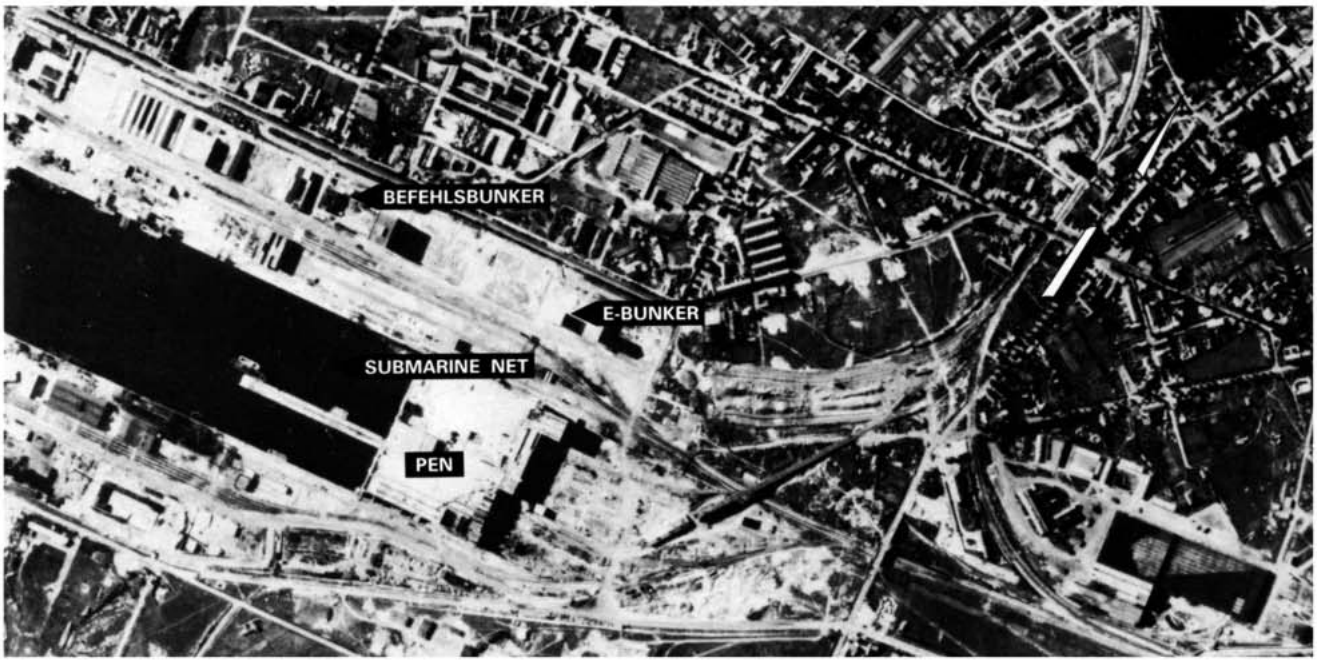
September 1, 1942 and *U-333* with Kapitänleutnant Erich Cremer at the helm sets out on another patrol. A 'wolf' of 3. U-Flotille, she had been launched at Emden on June 14, 1941 and was sunk west of the Scillies on July 31, 1944 by the sloop HMS *Starling* and frigate HMS *Loch Killin*. (Bundesarchiv)

The rear services area (across the width of the shelter) occupied the last 50 metres or so of the shelter's length, its floors divided up in the usual way to provide the various facilities — workshops, storage areas, offices, etc. The 'annex' had three storeys used as storage rooms; the 'tower' housed the electricity power-station, the steam station and offices.

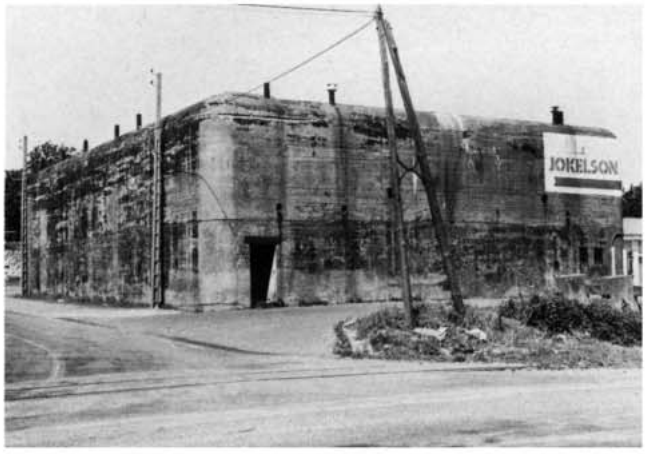
Two passages with railway lines ran through the shelter: one, about 5 metres wide, in the usual way with a single track across its width between the backs of the pens and the rear services area; the other, about ten metres wide, with a double track lengthways through the pens (between Pens 7 and 8) and along a jetty projecting about 200 metres into the basin. The entrances could all be closed by armoured doors.



Forty years later the basin and U-Bunker at La Pallice were used by German film director Wolfgang Petersen as locations for the final scenes in his production recreating that period of undersea warfare: *Das Boot*.



A sortie by a Mosquito of No. 540 Squadron on July 30, 1944 resulted in this excellent cover of the base. No U-Boats visible but a submarine net has been erected protecting the entrances of Pens 1-7. (Crown Copyright/Keele University)



La Pallice is one of the best of the old U-Boat bases in France for access today. The Befehlsbunker *(above left)* **and E-Bunker** *(above right)* **are both close to the U-Bunker, the tower of which is still occupied by the French Navy (see picture page 4).**

There were numerous service bunkers in the vicinity of the base; among them, one just north of it housing the main electrical transformer, the 'Befehlsbunker' (Command Bunker) on the northern side of the basin, and the three torpedo storage bunkers in the Camp de Jeumont, about one kilometre to the north-east.

Although the base is still French Navy property, it is no longer a naval base and the Navy actually uses only the rear 'tower'; two pens are loaned to the town of La Rochelle, the other eight being used by amphibious units of the French Army. The shelter is easy to find as it is close to the boarding quay for the ferry boats to the Ile de Ré; it can be approached and viewed easily from all sides and one is allowed through the passage between Pens 7 and 8 and onto the jetty in the basin; from the jetty there is a nice view of the entrances to the pens and taking pictures is not forbidden. Two satellite bunkers are to be seen nearby on the northern side of the basin; and the sheltered lock, with the still readable motto 'Wie bauen für den Sieg!', can be easily approached from any angle. It should be noted, though, that it is quite likely that this motto was painted, or at least repainted, when the final sequence of the film *Das Boot*, featuring a fictitious *U-96* commanded by Jürgen Prochnow, was shot at La Pallice! Other sequences of this remarkable film, based on a story written by Lothar-Gunther Buchheim and directed by Wolfgang Petersen, were shot in the basin and inside the shelter. (Remarkable as it was, it is worth recalling that the film did come in for criticism from former U-Boat men as not really portraying a true picture of what life aboard a U-boat was actually like.)

'Wir bauen für den Sieg!' — We are working for victory. A slogan on the side of the bomb-proof lock *(above)* **but is it original or of more recent origin?**

The tip of one of the Tallboys dropped on the pen is displayed in the French Navy office.

SAINT-NAZAIRE

Saint-Nazaire was the base for two U-Boat flotillas: the 7. U-Flotille, the 'Wegener' Flotilla as it was called (after Admiral Wolfgang Wegener), which arrived from Kiel in June 1941 and was commanded by Korvettenkapitän Herbert Sohler, and the 6. U-Flotille, the 'Hundius' Flotilla (after Paul Hundius, a famous U-Boat commander during the First World War), which arrived from Danzig in February 1942 and was commanded by Korvettenkapitän Wilhelm Schulz. In full use since October 1942, the base reached a peak of activity in July, August and September 1943.

Ace U-boat commanders abounded at Saint-Nazaire, particularly among the 7. U-Flotille. One of the unit's boats, the *U-48*, was the most successful of the Second World War, sinking 54 ships totalling 322,378 GRT and bringing five Ritterkreuz and one Eichenlaub to commanders or members of its crew. The *U-552* of Kapitänleutnant Erich Topp, whose personal tally at the end of the war stood at 34 ships totalling 191,411 GRT, was another renowned boat, and the *U-96* of Kapitänleutnant Heinrich Lehmann-Willenbrock was another.

Wolf pack at Saint-Nazaire. *U-552*, Kapitänleutnant Erich Topp, *U-567*, Oberleutnant zur See Engelbert Endrass and *U-93*, Oberleutnant zur See Horst Elfe, pictured in the southern lock in September 1941. Endrass was sunk north of the Azores in December and Elfe a month later west of Cape St Vincent. Only Topp's boat survived the war to be scuttled at Wilhelmshaven in May 1945. (ECP Armées)

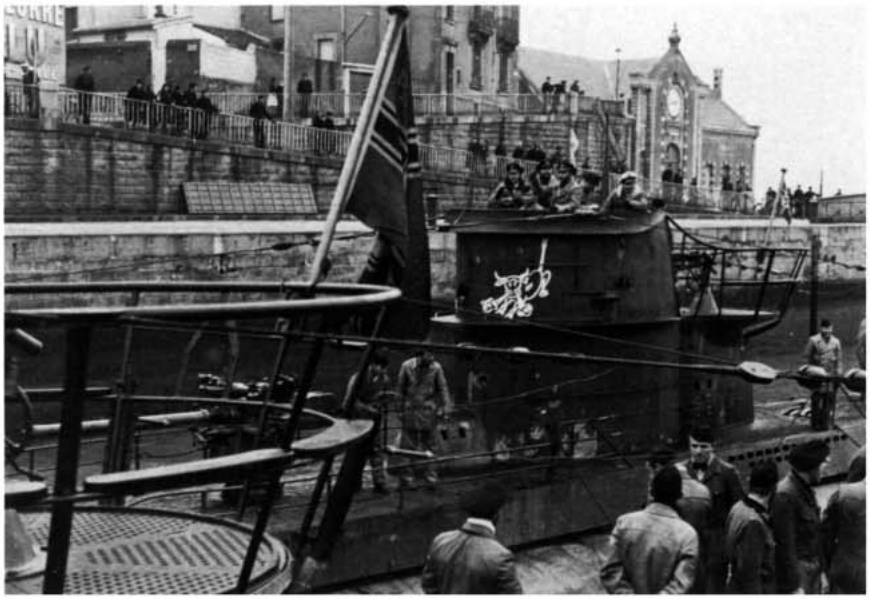
The passage of boats through the lock provided an ideal opportunity for photography of the crews. Two aces of the 7. U-Flotille pictured in July 1941 were Kapitänleutnant Heinrich Lehmann-Willenbrock *(left)* on the *U-96*, and Kapitänleutnant Ulrich Heilmann of the *U-97 (right)*. Heilmann later joined the 29. U-Flotille in the Mediterranean only to be bombed and sunk off Cyprus by 459 Squadron, RAAF, on June 16, 1943. By the war's end Lehmann-Willenbrock had achieved a personal tally of 25 victories having sunk ships with a total tonnage of 183,253 GRT. The *U-96* was hit and sunk when the U-Boat facilities at Wilhelmshaven were attacked by B-24s of the USAAF 2nd Air Division on March 30, 1945. (ECP Armées)

When the Allied armies invaded France in the summer of 1944, the numerous services and defensive bunkers built all around the base made the place prepared to endure a siege, and 'Festung Saint-Nazaire' held out under the command of Generalleutnant Hans Junck until May 8, 1945. The 6. U-Flotille was disbanded in August 1944 and the 7. U-Flotille was transferred to Norway. Four U-boats departed at the end of August and the last two, which had to wait while some vital repair works were undertaken, in September. There was little activity after that, other than for a few liaison and supply trips: in November a U-Boat from Germany entered the basin with supplies and ammunition and left as soon as everything had been unloaded. During the siege, liaison trips were made at night by motor torpedo boats. When the base was captured in May 1945 *U-510* was found in Pen 4, docked for repair, having got back from the Far East with a load of raw materials a few days before the end. This Type IXC, built by Deutsche Werft at Hamburg, was commissioned by the French Navy in 1946 as the S-11 *Bouan* and was to remain operational until 1963.

The U-Bunker was built on the western side of the basin of Saint-Nazaire, a large non-tidal basin linked to the open sea by two locks: the old entrance, or Eastern Entrance, immediately opposite the shelter, and the Southern Entrance. In 1943 German engineers had started the construction of a third protected lock parallel to the existing Eastern Entrance, this new lock being just in front of Pens 8 and 9. The concrete bunker built above the new lock was about 155 metres long, 25 metres wide, with a maximum height of about 14 metres. Four positions for 20mm Flak guns were built at each corner of a platform on the western side of the roof.

The shelter, for which about 480,000 cubic metres of concrete were poured, was some 295 metres wide, 130 metres long and 18 metres high and covered an area of about 39,000 square metres. It had fourteen pens, their entrances all protected by twin shutters. Pens 1 to 8 were dry-dock pens which were closed by submersible caissons. Pens 9 to 14 ('wet' pens) each provided two berths apiece: 9A-9B to 14A-14B.

There were two pumping stations for the dry-dock pens, one with four main pumps (1,440 cubic metres per hour each) and four drainage pumps (360 cubic metres per hour each) for Pens 1 to 5, and another with two main pumps (1,440 cubic metres per hour each) and two drainage pumps (180 cubic metres per hour each) for Pens 6, 7 and 8. A main pump installed on a barge could also be brought into use at any of them.

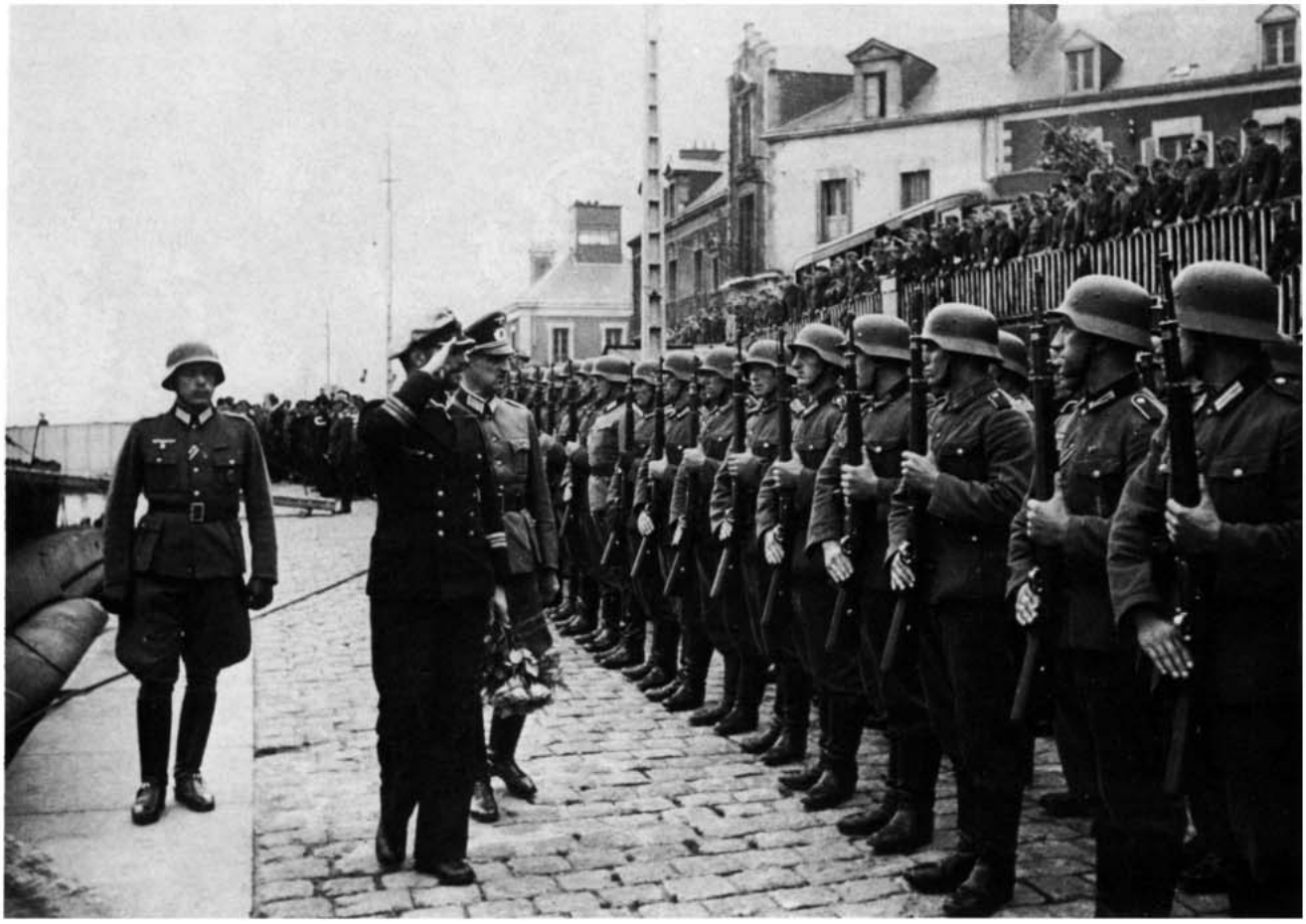


A nice close up of Endrass's boat taken on November 26, 1941, less than one month before she was lost. In 1939 Endrass was serving on the *U-47* with Kapitänleutnant Günther Prien when the latter achieved lasting fame by torpedoing the battleship *Royal Oak* inside the Scapa anchorage in the Orkneys. The exploit earned Prien the nickname 'The Bull of Scapa Flow' after the snorting bull insignia which adorned his conning tower — adopted also by Oberleutnant zur See Endrass on the *U-567*. Less than a month after this picture was taken she was shadowing the convoy HG 76 when depth-charged by the sloop HMS *Deptford* and the corvette HMS *Samphire*, sending her and her captain to the bottom. (ECP Armées)

The Old Town of Saint-Nazaire; the pumping station is the only building beside the lock which remains standing from that era.

Each victory pennant flown by returning U-Boats was emblazoned with the tonnage of each ship sunk. The two vessels claimed by Korvettenkapitän Karl Thurmann (he of the twisted periscope) in *U-553* were the British *Susan Maersk* (in reality only 2,355 GRT) and the Norwegian *Ranella*, 5,590 tons, both sunk on June 12, 1941. Thurmann failed to return from a patrol in January 1943. (ECP Armées)

This is how a periscope should look — although not adorned with flowers! Bon voyage to the *U-94*, a Type VIIC built at Kiel in 1940 by Germania Werft. Adorned with bouquets, Kapitänleutnant Herbert Kuppisch and his crew leave Saint-Nazaire in July 1941. She was sunk south of Haiti in August 1942 by the RCN corvette *Oakville* and aircraft from US Navy Squadron VP92. (ECP Armées)



Every returning U-Boat was accorded a heroes' welcome. Here Kapitänleutnant Herbert Kuppisch of U-94 inspects the Army guard of honour drawn up on the quayside. (ECP Armées)

Such are the historic scenes of yesterday in the Saint-Nazaire of today; transformed by the destruction and subsequent redevelopment since the war.

Kapitänleutnant Gerd Schreiber enters the lock in *U-95* at 8.30 a.m. on May 13, 1941 having sunk the Norwegian *Taranger* ten days before. *U-95* went down east of Gibraltar in November while serving in the Med with the 29. U-Flotille after being attacked by the Dutch submarine *O-21*. (ECP Armées)

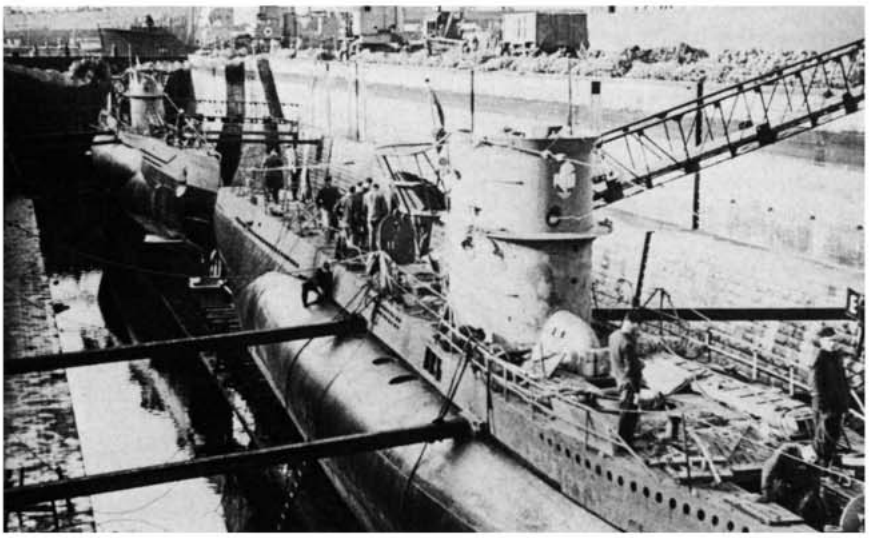
July 4, 1941. *U-75*, commanded by Kapitänleutnant Helmuth Ringelmann, returning from the voyage on which he claimed a steamer (so far unidentified) on June 25. After she had transferred to the Mediterranean, the destroyer HMS *Kipling* ended her days off Mersa Matruh on December 28. (ECP Armées)

***U-69* (captain Kapitänleutnant Jost Metzler) returns to base flying several victory pennants, the large one proclaiming '9,500', being for the *Empire Ability* torpedoed on June 27, 1941 although her actual tonnage is recorded as 7,603 GRT. HMS *Viscount* sank the *U-69* in the North Atlantic in February 1943. (ECP Armées)**

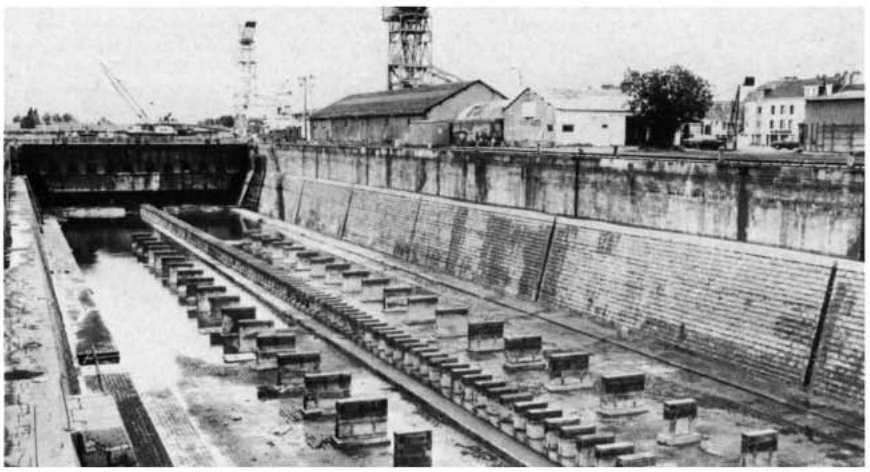
Because of lack of space, the shelter had to be built right into the harbour and town of Saint-Nazaire and was not as long as the others, the rear services area being less. This also explains why there was no massive 'tower' — it being only 15 by 25 metres compared to 30 by 50 metres at La Pallice or 73 by 58 metres at Bordeaux. The 'tower' and the 'annex' housing the usual power-stations, storage-rooms, offices, etc., completed the base on its northern side. The opening on this side for the passage running across the shelter between the backs of the pens and the rear services area — the usual 5 metres wide and carrying a railway line — lay between the 'tower' and the 'annex'. It would seem that work was in progress to add a symmetric 'tower annex' arrangement on the southern side of the building, but the invasion of France in the summer of 1944 put an end to everything.

For the same reason, the roof of the base was never finished: ninety per cent or so of the second layer was added, but the bomb-trap superstructure was laid over only a third of the roof, another third having the support walls only. On the basin side, these support walls ended at a concrete tunnel which ran the whole width of the building above the entrances to the pens. On this tunnel, directly above the entrance to Pen 8, was a well for a quadruple 20mm Flak.

There were defensive bunkers all over the harbour and dock area, as well as in the nearby streets, but all of these small structures were demolished after the war; some larger bunkers, either Flak bunkers or bunkers housing electrical transformers, have survived a short distance from the base. The base itself was part of the defensive system of Saint-Nazaire — access to the shelter, from the town to the west and from the harbour to the north, being controlled from the ground floor of the 'tower' with its firing ports for anti-tank guns and machine guns and armoured turret on top for a machine gun. Another armoured turret for two machine guns with six firing slits, was positioned on the eastern end of the protected lock bunker roof and controlled the whole Loire estuary. The concrete tunnel which ran the width of the shelter roof above the entrances to the pens was lined with some twenty firing ports to cover all movement on the eastern side of the basin.



With two flotillas based at Saint-Nazaire, by the end of 1941 pressure on repair facilities was such that the open air dry-docks at the northern end of the Basin de Penhoët (see map page 13) had to be pressed into service. (ECP Armées)



From VIICs . . . to nothing. Such has been the run down of work in recent years at the Navy yard.

The punishment that Saint-Nazaire had received from more than 2,000 tons of bombs from the Allied air forces by 1944 is illustrated by this picture taken by a 541 Squadron PRU Spitfire on July 24. The whole dock area and much of the town has been laid waste though the U-Bunker is remarkably untouched. The bombing of the U-Boat pens stemmed from decisions taken at the Casablanca Conference by Roosevelt and Churchill in January 1943 although the Air Staff opposed the plan, deeming the bombing of the submarine bases no short cut to winning the Battle of the Atlantic. In the event they were proved right; even after 4,500 tons on Lorient, the U-Bunker was still in operation. (Crown Copyright/Keele University)

The base can be approached from any angle and its position within the basin enables a good frontal view to be had from the far side. The pens are abandoned — many have been filled in up to quay level — and two commercial concerns have made use of the shelter, using filled-in pens as storage space for phosphate and soya. Again it is a case of 'Entrée Interdite' but it is possible to venture into the shelter through some of the entrances at the rear, at your own risk! The interior is somewhat muddy and dirty, the rain having got in. The sheltered lock can be visited and its roof has been made accessible: there are some 40,000 visitors each summer who enjoy this pleasant view of the basin and the shelter, and, to the south, of the Loire river and the Forme Joubert of *Campbeltown* fame. There are plans for a submarine just decomissioned by the French Navy, the Narval Class S-637 *Espadon*, to be floated into the lock, and for the lock to be then pumped put, to enable visitors to go over the submarine in this 'natural' setting, thus providing an added attraction to this already very interesting place.

As it is today. The defensive tower on the north-western corner of the U-Bunker with five embrasures for automatic weapons or anti-tank guns and an armoured machine gun turret on the roof.

Inside, stencilling on the walls remains: 'Mitte Turm' indicating where the centre of the conning tower had to be positioned and 'Zentrale I' for one of the two internal power stations.

BORDEAUX

1945-1985. Time marches on at Bordeaux but the massive U-Bunker remains except for the armoured doors. Even the original pen numbers have survived.

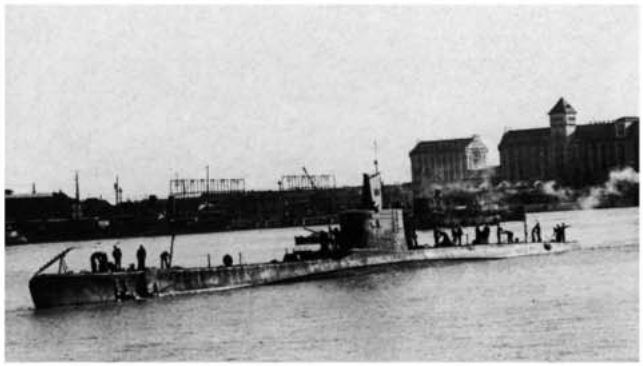
From the autumn of 1940 Bordeaux was the base for the Italian Betasom submarine flotilla and from October 1942 for the 12. U-Flotille which was created there under the command of Korvettenkapitän Klaus Scholtz.

In August 1940 Admiral Karl Dönitz conferred with Amiraglio Angelo Parona to try to organise efficient co-operation in the Atlantic; Capitano di Fregata Angelo Sestini was attached to the B.d.U. and Korvettenkapitän Hans Rösing, former commander of the 7. U-Flotille, to the Betasom staff. The first three Italian submarines entered Bordeaux harbour in September 1940 but in spite of the efforts made by the enterprising and individualistic Italians to adapt to the more methodical German tactics, things did not work out as Dönitz had hoped. He stated later that during the first trial period between October 10 and November 30 the Italian submarines sank only 20 GRT each per day, whereas the U-Boats sank 1,115 GRT each per day. Amiraglio Parona and his staff worked hard to adapt their submarines — twenty-five or so were engaged by Betasom — to the Atlantic, modifying for example the

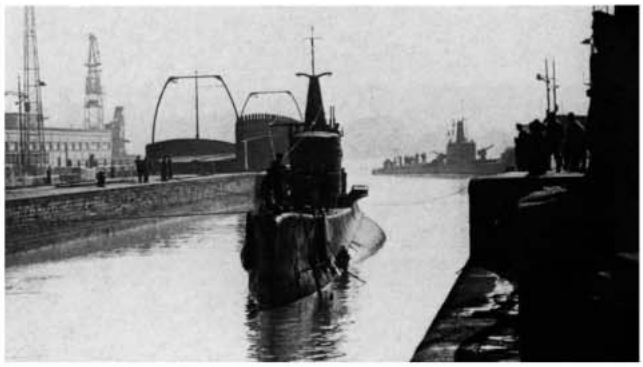
Both methods used in adding the second roof layer can be seen here — Pens 1-8 having the triangular and Pens 9-11 the rectangular void between the two layers, whereby the weight of the second was borne above the pen walls.

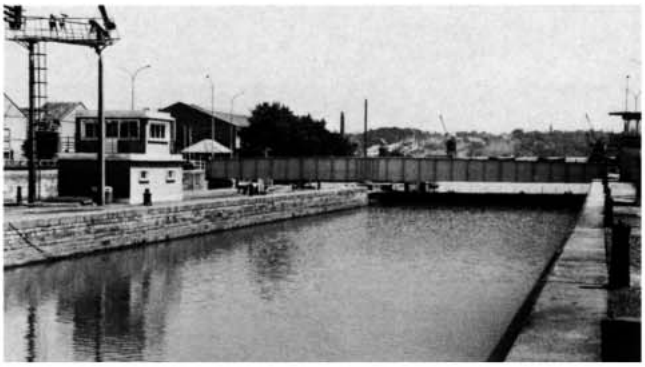
Bordeaux began as the Atlantic base of the Italian Flottiglia Betasom commanded by Amiraglio Angelo Parona.

Kriegsmarine officers watch the reloading of an unidentified Italian submarine of the Marconi class moored alongside Bassin No. 1 (see map on page 10). It is important to remember that Bordeaux is an inland port, 60 miles from the coast. (ECP Armées)

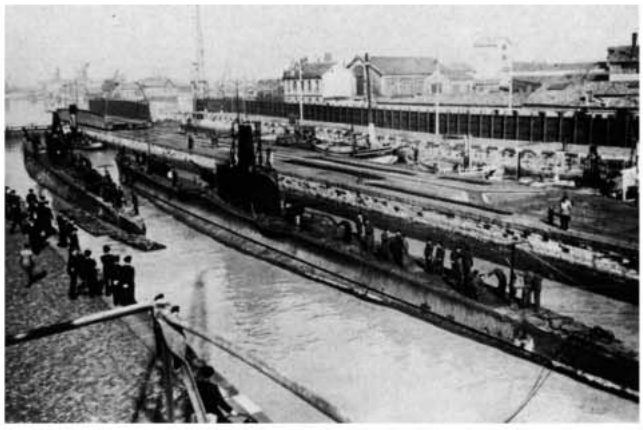


The German reporter Hans Dietrich snapped the *Allessandro Malaspina*, a boat from the Marconi class, turning into the Garonne river on September 28, 1940, and manoeuvring to enter the lock. The captain was Capitano di Fregatta Mario Leoni. The *Malaspina* was later lost in the Atlantic, probably sunk by HMS *Vimy* on September 21, 1941. (ECP Armées)



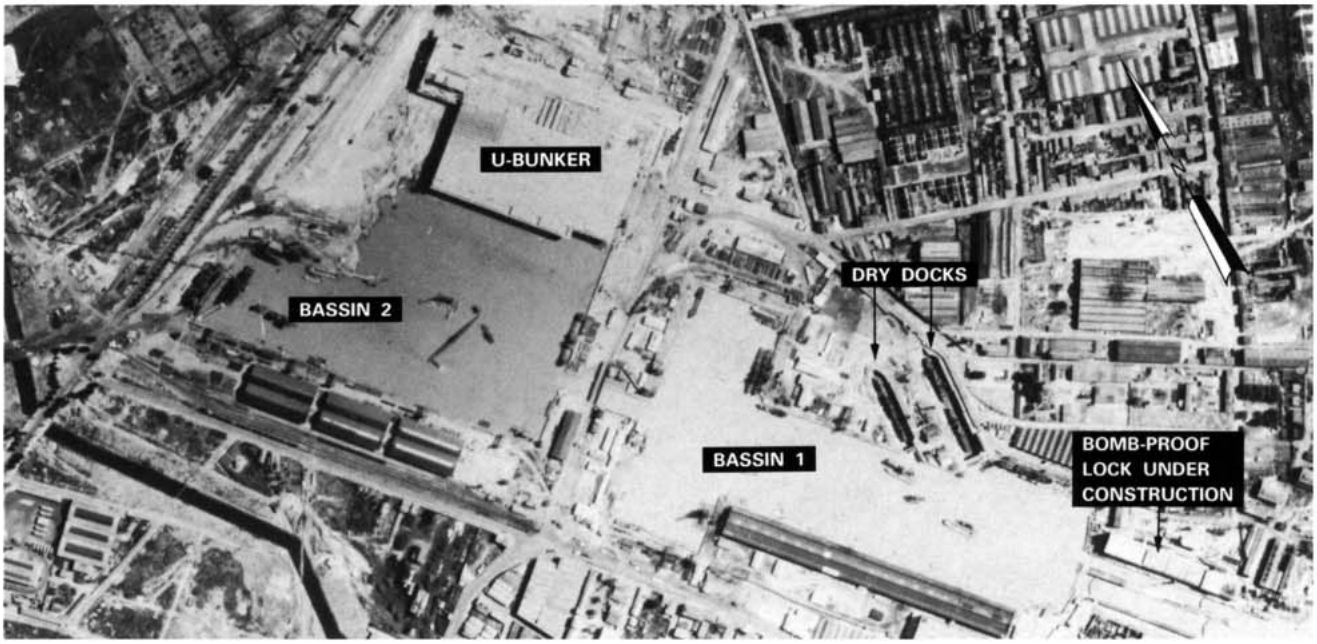


On October 5 he took this shot of the *Luigi Torelli*, also of the Marconi class, with *Commandante Faà di Bruno* (Cappellini class) in the background, entering the larger of the two outer locks. The swing bridge has since been renewed. (ECP Armées)



Having entered the lock the submarines await its flooding before entering the inner No. 1 basin. Capitano di Fregatta Primo Longobardo commanded the *Luigi Torelli* (on the left), the second submarine having Capitano di Corvetta Aldo Enrici as its captain. The former was taken over by the Japanese at Singapore in September 1943 (when Italy changed sides); the *Commandante Faà di Bruno* being sunk by HMS *Havelock*, one month after these pictures were taken (ECP Armées)

The inner gate opens and the *Luigi Torelli* makes for the mooring quays. Beyond lies Bassin No. 2. (ECP Armées)



Right after D-Day, Spitfires and Mosquitos of No. 544 Squadron were ranging along the French coast bringing back evidence of possible German moves to counter the invasion. In this picture of Bordeaux docks taken on June 9, one U-Boat was caught in the open in Bassin No. 2. (Crown Copyright/Keele University)

tower and the air intake for the diesel engines, but other shortcomings, such as the slow surface speed or the long diving time of sixty seconds, could not be improved upon. Another try was made at the beginning of 1941 to engage the Italian submarines in joint search and attack operations against convoys but this again failed. On May 15 Dönitz and Parona agreed that separate areas of operation would be entrusted to the Betasom, and the Italians did quite well, mainly in individual actions aimed at isolated ships. Altogether, between August 1940 and July 1943 they sank 98 ships totalling 526,976 GRT in the Atlantic and four ships totalling 14,574 GRT in the Indian Ocean.

Besides the presence of Italian submarines at Bordeaux, the port was also the home of most of the supply U-Boats and most of the very long range Type IXD2 boats. After an initial commitment for some of the supply U-Boats with the 10. U-Flotille at Lorient, all but a few of them were based at Bordeaux with the 12. U-Flotille. Nine Type XIV boats — 1,932 tons displacement — and five Type XB boats — 2,177 tons displacement — operated from Bordeaux and resupplied hundreds of U-Boats before they were themselves sunk, most of them in 1943. Their operational career was short but three Type XIV boats, *U-459*, *U-460* and *U-461*, survived long enough to set out on six trips — an average of fourteen to twenty U-Boats being resupplied on each. The last two of the Type XIV boats, *U-488* and *U-490*, were sunk in April and June 1944, the latter on its first operation, and the last of the Type XB boats in the Atlantic, the *U-219*, sailed for the Far East as a transport submarine a few hours before the occupation of the Bordeaux base at the end of August 1944 and reached Djakarta four months later on December 11. Taken over there by Japan as the *I-505*, it was to remain 'operational' up to August 1945! The 12. U-Flotille also took over five Italian submarines, converted to transport vessels, in September 1943: *UIT-21* lay unused at Bordeaux, *UIT-22* was sunk on its way to the Far East, *UIT-23* was sunk on its way back from Singapore, *UIT-24* and *UIT-25* were later taken over by the Japanese and renumbered again *I-503* and *I-504*.

Japanese submarines had visited Bordeaux in 1943; among them, the *I-8* of Shosa (Lieutenant-Commander) Tatsunasuke Arizumi, who took his vessel into Bordeaux in July 1943 and succeeded in bringing her back to home waters.

Some ace U-Boat commanders were based

The dock area looking north as it appeared in the 1970s. This was the target of the 'Cockleshell Heroes' in December 1942 when Royal Marines paddled five canoes 60 miles up the Gironde to place limpet mines on the hulls of German ships in the harbour. The chief of Combined Operations, Lord Louis Mountbatten, reluctantly sanctioned the raid which he felt was a suicide mission. Four ships were damaged but of the ten Marines who took part, only two escaped with their lives.

Before the actual U-Bunker was built on the north-eastern side of Basin No. 2, servicing had to be done in the open with no more substantial protection than a camouflage net. This is an Italian Calvi class submarine under repair in Forme 1, one of the two dry docks at Bordeaux, the largest of which was 515 feet long having a depth of 24 feet. (ECP Armées)

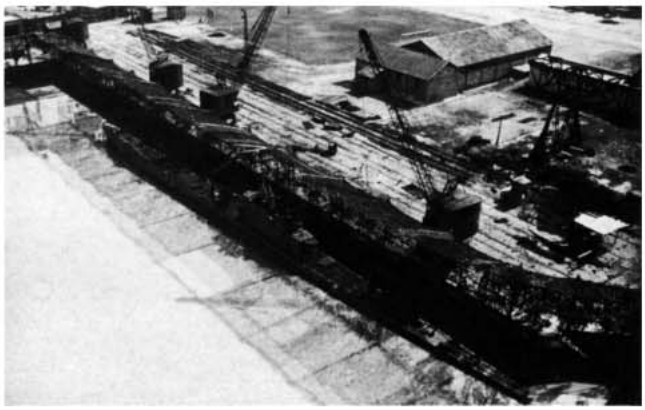
at Bordeaux with the 12. U-Flotille, among them Korvettenkapitän Wolfgang Lüth who sank 22 ships totalling 103,712 GRT in two record voyages with the *U-181*, one in late 1942, the other in mid-1943; he was to end the war with the second highest 'score' of the U-Boat commanders with a total of 46 ships and 228,429 GRT. The *U-181* was a long-range Type IXD2 boat (the type having a radius of action of 23,700 miles) and of the thirty built, more than twenty were based at Bordeaux with the 12. U-Flotille, carrying out lengthy and distant operations in the South Atlantic and Indian Ocean. On October 23 the *U-196* of Kapitänleutnant Eitel-Friedrich Kentrat returned to Bordeaux after 225 days at sea, the longest voyage of the war.

When the end in France approached, the German High Command decided that the entrance to the Gironde would be ideally controlled by 'Festung Gironde Nord' around Royan and by 'Festung Gironde Süd' near le Verdon and ordered withdrawal from Bordeaux. The RAF launched two new attacks against the shelter in August, 177 tons of bombs being dropped on August 11 and 165 tons the following day, three other attacks being aimed at oil storage. The 12. U-Flotille was disbanded, and the withdrawal started on August 21, but for four more days some five hundred men held the place to enable the destruction of the installations; it seems likely though that most of the men who were withdrawn failed to reach Germany, being trapped south of the Loire with 'Gruppe Elster' *(see After the Battle No. 48)*. Except for two, the Type IXD2 *U-178* and the Type IXC40 *U-188*, which were unable to sail and were scuttled on August 20, the last U-Boat left Bordeaux four days later. When French FFIs entered the base on the morning of August 26 they found only the wreck of *UIT-21* scuttled in one of the pens. This was the former *Giuseppe Finzi* built by Odero-Terni-Orlando for the Italian Navy; captured by the Germans on September 8, 1943, it had been renamed *UIT-21* but had seen no further service.

The base was built on the north-eastern side of Bassin 2, on the northern edge of Bordeaux; Bassin 1 and Bassin 2 were two non-tidal basins linked to the Garonne by two parallel locks. There were about 1,100 metres of water from the shelter to the Garonne.

The U-Boat shelter was about 245 metres wide, 162 metres long and 19 metres high; the 'tower' which stood on the northern corner of the base was 73 by 58 metres and 23 metres high. These buildings covered an area of about 43,000 square metres and their construction required about 600,000 cubic metres of concrete. Above the pens the roof was 5.60 metres thick, and about 3.60 metres above the rear services area. The Bordeaux bunker was the one above which the bomb-trap superstructure reached its greatest extent: by the end of the war the roof area above the pens was completely covered and half of the rear services roof area. Because of the thinner roof of the services area, the superstructure was at a lower level there.

The Achilles heel of the base was the lock system on the Garonne, and the German engineers had started the construction of a protected third lock, parallel to the two existing ones. Because of the adverse conditions of the site, the ground being soft and



muddy and prone to flooding, the lock had to be built first, in the cut which was dug for it as far down as the water table. From then on, with the lock supported on jacks, the cut was dug deeper beneath the lock, this area being pressurised to prevent flooding or caving in, an air-lock being built into the floor of the lock. In these dangerous working conditions, digging continued for the lock to be lowered into position. The concrete shelter, measuring 175 metres long by 35 metres wide by 16 metres high, was then built on top. The job was started too late, however, for this protected lock to be put to use. It was demolished shortly after the war and the place is now the Quai du Maroc. The whole port area was littered with smaller bunkers, either Flak bunkers or storage and personnel bunkers, all of which have been cleared away. One bunker that has survived, though, is the base's former fuel tank. Externally this measures about 80 by 38 metres and is about 15 metres high. It could hold up to 4 million litres of fuel, which could be supplied to where it was needed via an underground pipeline system.

The shelter comprised eleven pens, three of them dry-dock, all their entrances being protected by twin shutters:

Pens 1, 2, 3 and 4: 105 metres long and 20 metres wide, providing two berths each (1A-1B, 2A-2B, 3A-3B, 4A-4B).

Pens 5, 6, 7 and 8: 105 metres long and 14 metres wide; single berths.

Pens 9, 10 and 11: dry-dock, 95 metres long and 11 metres wide.

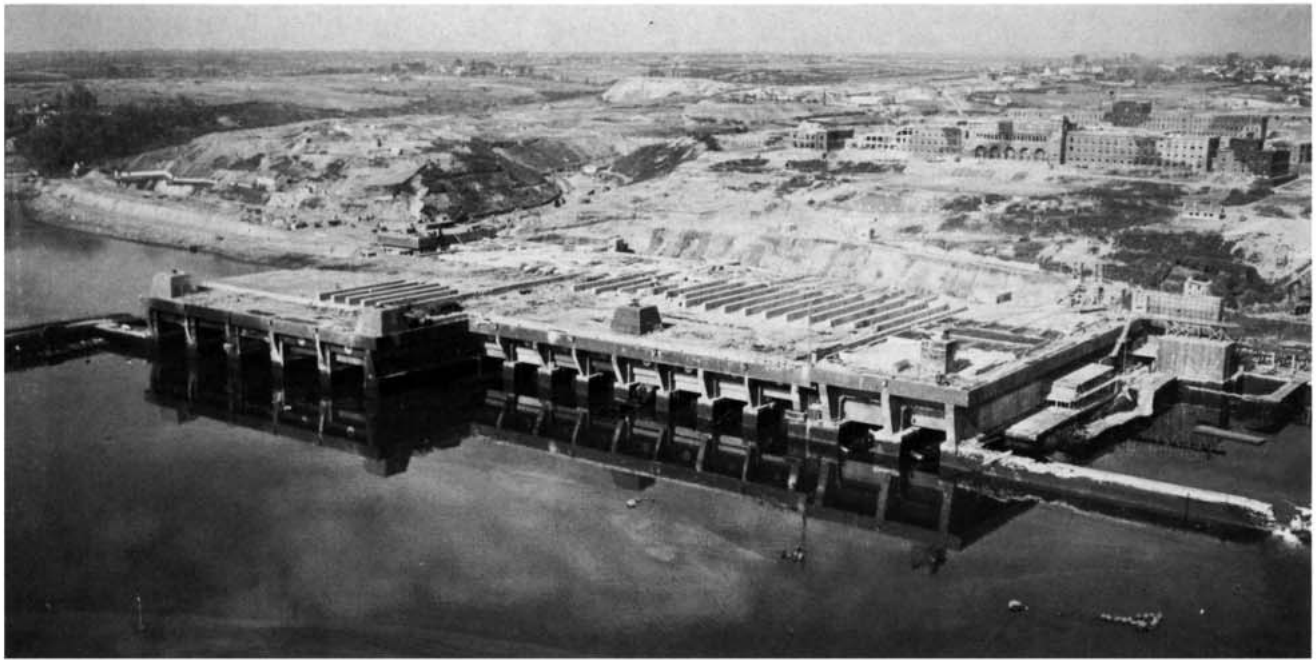
In accordance with the general specification for such bases, the rear part of the building was occupied by the services area, behind the passage which ran across the bunker at the backs of the pens. This area was some fifty metres deep. The passage was nearly 300 metres long — entering the shelter on its eastern side and continuing to the western side of the adjoining tower. The tower, which housed the electricity and steam power stations, was to have numerous additional offices and rooms but it was never completed and parts of its roof are still 'under construction'.

Bordeaux is to my mind the most 'aesthetic' of the five bases, as well as the one which has changed the least since 1944. If you catch a Number One bus in front of the railway station, it will take you to the banks of the Garonne river, and after a ten-minute walk by the basins you will find yourself in front of the completely forgotten and wide open shelter. Although 'Entrée Interdite', it presents an enticing attraction for anyone who dares to venture inside. But be warned — there are no safeguards; there are holes where none should be; and any fall from that sort of height could well prove fatal. No trace remains of the long-demolished sheltered lock, but the fuel bunker is still be seen four hundred metres to the north-east.

A more permanent method of camouflage was installed over the second dry dock, Forme 2, together with an overhanging framework on the quayside to hide any submarine moored alongside. The one pictured *(above right)* is the Liuzzi class *Alpino Bagnolini*. Note that construction of the U-Bunker has just commenced.

This picture was taken quite by chance the same day as the one on page 39 and gives an almost perfect comparison. The completed U-Bunker can be seen at the top.

Defence bunkers built on the Quai Carnot were demolished in 1945. The notice on the building reads 'Magazzino viveri' (supplies warehouse) — a reminder of the early days when the Italians occupied the base.



BREST

After the invasion of France, the capture of a port was an important objective yet it was only to be expected that the garrisons would fight to the last to prevent the facilities falling into Allied hands. The bitter contest for St Malo *(see After the Battle No. 33)* from August 4-17 should have been sufficient warning yet United States forces fought on doggedly until the middle of September to capture Brest. When it finally fell on the 18th after some 10,000 American casualties, the docks were in ruins from a combination of bombing, shellfire and demolitions and useless for any immediate practical purposes. This picture shows the U-Bunker, the only structure left intact, shortly after its capture. (IWM)

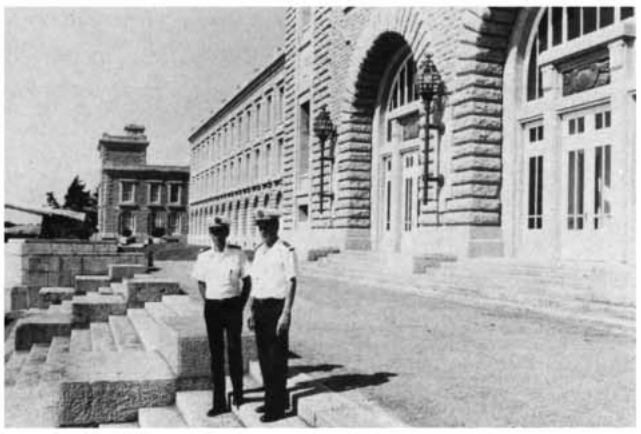
On September 15, 1940, as soon as the French Naval dockyards at Lorient were restored to full running order for the Kriegsmarine, Vizeadmiral Hans Stohwasser was transferred to Brest as Oberwerftdirektor, with the same task as at Lorient. He was equally successful, and Brest was soon the home port for two submarine flotillas: the 1. U-Flotille, the 'Weddigen' Flotilla (after Otto Weddigen, a successful U-Boat commander during the First World War), which moved from Kiel in June 1941, and the 9. U-Flotille created at Brest in November 1941. At the beginning of 1943 the former was under the command of Korvettenkapitän Werner Winter and the latter under Korvettenkapitän Heinrich Lehmann-Willenbrock. Among the aces to be based at Brest were Kapitänleutnant Reinhard Suhren of the *U-564* and Kapitänleutnant Adalbert Schnee of the *U-201*.

After the Allied break-out in Normandy, the US VIII Corps had the job of capturing Brest and its huge naval base, and it launched the first operation against the town's defences on August 21. The eight or so U-boats still in the shelter at the beginning of the month had left by the middle and the 9. U-Flotille was disbanded. Korvettenkapitän Heinrich Lehmann-Willenbrock, ordered that the badly damaged *U-256* be hastily repaired and a makeshift schnorkel fitted. On this fragile boat he left Brest on September 3, the last U-Boat to leave, and succeeded in reaching Bergen in mid-October. The *U-256* was in such bad shape that she was immediately paid off and Heinrich Lehmann-Willenbrock was given command of the 11. U-Flotille based at Bergen. With no prospect of any more U-Boats operating from Brest, the 1. U-Flotille too was disbanded in September. The only U-Boat to remain at Brest was *U-415*, which had struck a mine in front of the shelter on July 14 and had been removed a week later to Pen 4 to ascertain the damage. In due course, it was scrapped.

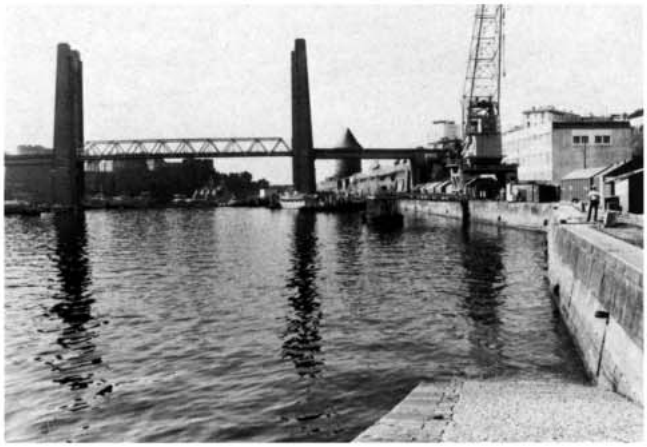
'Festung' Brest was taken on September 18 only after a fierce month-long battle, and most of the town and harbour area were in ruins. Even then, there was some fighting the following day on the Crozon peninsula, to which the tough 'Festung' commander-in-chief, Generalleutnant Bernhard-Hermann Ramcke, had withdrawn.

The base was built on the south-western edge of the French Navy Arsenal on the site of a former seaplane station; its construction started early in 1941 and was carried out so efficiently that most of the base was ready at the end of the year. The shelter, 333 metres wide, 192 metres long and about 17 metres high, covered a record area of some 52,000 square metres; it actually consisted of two complete structural units, the first consisting of thirteen pens, A to E and 1 to 8; the second of Pens 9 and 10, the last to be built. Excavation, cofferdam work and construction in progress adjacent to Pen 10 when Brest fell would seem to indicate that additional buildings were planned. The shelter followed the same general pattern of the bases built on a non-tidal basin, with a five-metre-wide passage running the width of the building between the backs of the pens and the rear services area; but, as the five 'wet'

Behind the U-Bunker *(see top picture)* stood the Ecole Navale. To look at these two photographs taken over forty years apart one would think time has stood still, so perfect has been the



French restoration. The two officers who kindly stood in for our comparison are Capitaine de Corvette Daniel Deshors and Capitaine de Corvette Laurent Latourrette. (ECP Armées)



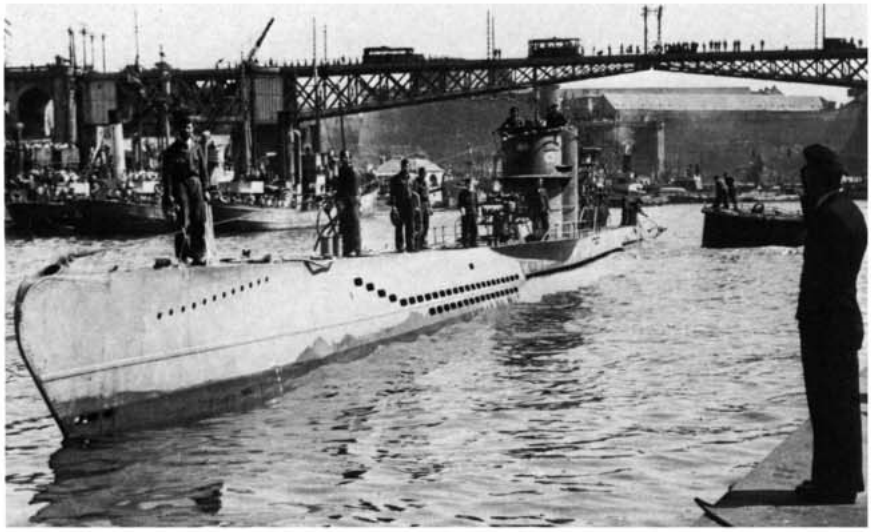
pens, A to E, were set about 45 metres forward of the 'dry', there was space for workshops between the backs of them and the passage. The 'tower' was on the south-western side of the shelter, and the passage on that side ran through its base: the massive door was protected by machine gun positions and was adorned with a triumphant 'Through fighting to Victory'. Ammunition and other such stores were kept in tunnels cut into the cliffs behind the shelter, and petrol and oil in tanks dug into the hill to the west.

As elsewhere, strengthening of the roof had been carried out in some places and not in others. The first layer of the roof of the first structural unit was 3.80 metres thick, and that of the second structural unit (above Pens 9 and 10), 4.30 metres. The second layer had been poured all over the roof of the first unit except for the rear services area — being standard practice — and the front half of the five mooring pens (A, B, C, D and E), and was in progress on the second unit when all work had to stop. This resulted in a roof thickness of about 6.20 metres for the best protected areas. The construction of the bomb-trap superstructure had been entered upon for the whole building but was far from completed. As usual the thinner roof above the rear area was protected first, and here all the support walls were up and half the beams laid. Above the pens, less than half of the support walls had been built and not a single beam laid. Three pits for 20mm Flak guns were sited on the roof above the entrances to the pens, as well as a tower which housed a radar installation.

Of the shelter's fifteen pens:

Mooring Pens A, B and C were about 115 metres long and 17 metres wide. They offered two berths each (A1-A2, B1-B2, C1-C2) but could take as many as three U-Boats at a time; in this case part of the third vessel projected slightly beyond the pen entrance. The entrance height above quay level was 6 metres; from there to the bottom, in this instance the natural rock bed, was 10 metres. It would seem that the entrances were designed to be protected by double doors but neither these nor a protective shutter were ever installed.

Above left: **French locals line the Recouvrance bridge (marked 't' on the map on page 12) over the River Penfeld as a band** *(bottom)* **plays the *U-83* into port in October 1941. The submarine was a Type VIIB from Flender Werft at Lübeck with the 1. U-Flotille but she was lost in the Mediterranean south of Cartagena on March 9, 1943 while serving with the 29. U-Flotille. (ECP Armées)** *Above right:* **Today the old swing bridge has been replaced with one having a single lifting span.**

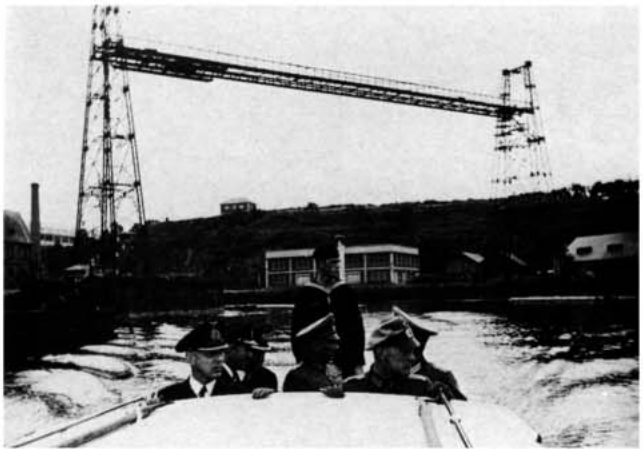


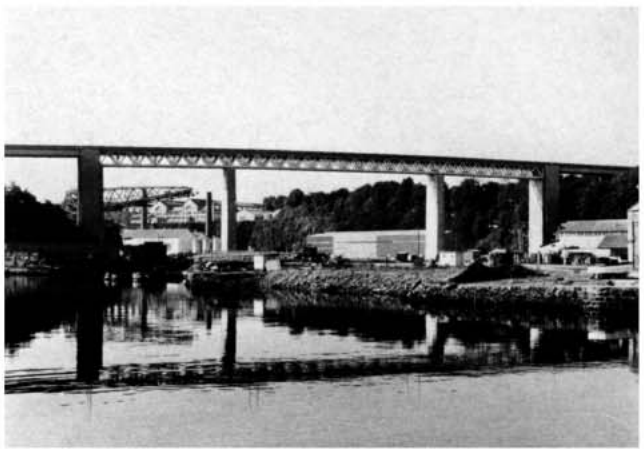
Some weeks later the *U-203*, another boat from the 1. U-Flotille, approaches the same mooring on the western bank — at the helm Kapitänleutnant Rolf Mützelburg. She was depth-charged by the destroyer HMS *Pathfinder* and aircraft from the escort carrier HMS *Biter* while attacking the convoy ONS 4 south of Greenland on April 25, 1943. (ECP Armées)

Pens D and E were similar to the other three mooring pens but shorter — 96 metres — providing two berths each (D1-D2, E1-E2). The entrances were protected by a single shutter which came down to within about 2 metres of quay level.

Dry-dock Pens 1 to 8 were single berth pens, 11 metres wide and between 96 and 99 metres long. Entrance height from lintel to quay level, 6 metres; from quay level to the concrete bottom of the pen, 8.80 metres. The usual overlapping twin shutters protected the entrances.

Dry-dock Pens 9 and 10 were slightly larger: 114 metres long by 13.50 metres wide, with an entrance height from lintel to quay level of 8 metres, and a depth from there of 11 metres.





Above left: **A guided tour of the dock area for Generalfeldmarschall Günther von Kluge by Kriegsmarine launch. Kluge became Commander-in-Chief in the West on July 3, 1944, replacing Gerd von Rundstedt but was himself relieved and replaced after six weeks in command by Walter Model. Seemingly sacked in disgrace for failing to stop the American armoured breakthrough, on his way back to Germany on August 19 he committed suicide. (ECP Armées)** *Above right:* **After its destruction, the upstream L'Harteloire transporter bridge ('T' on plan) was replaced by this modern design.**

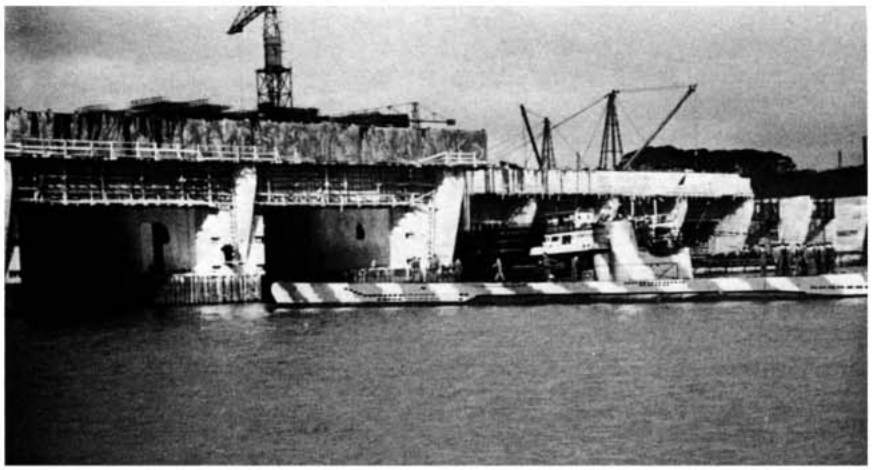
Left: **Kapitänleutnant Adalbert Schnee brings the *U-201* to a riverside mooring on the Penfeld near the Porte Jean Bart. A distinguished U-Boat commander, he was awarded the Ritterkreuz on August 30, 1941 and the Oak Leaves on July 15, 1942. He survived the war but the *U-201* did not: she went down on February 17, 1943 off Newfoundland, depth-charged by HMS *Fame*.** *Below:* **Having tied up, a heroes' welcome awaited Schnee on the quayside. The camouflaged buildings were all later destroyed — only the Tour Tanguy remains although restored to a slightly different design. (ECP Armées)**

RAF attacks on Brest

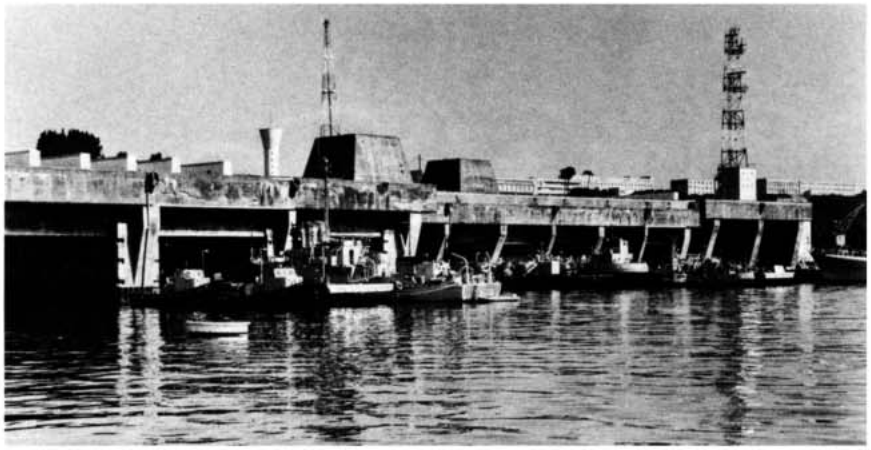
The shelter at Brest underwent three attacks by Lancasters of No. 617 Squadron, each aircraft carrying one 12,000lb Tallboy bomb. The bombs were dropped from an altitude of 16,350 to 18,500 feet, the centre of the shelter being selected as the aiming point, the fuses being set for 11 seconds delay on the first mission and 0.5 seconds delay on the others. In the first attack, on August 5, 1944, seventeen Lancasters were dispatched and thirteen dropped their bombs over the target, obtaining five direct hits; in the second, on August 12, eight of the eleven aircraft dispatched dropped their bombs over the target, obtaining three direct hits; and in the third, on August 13, when only five of the twenty-eight Lancasters dispatched dropped their bombs over the target, they obtained one direct hit and two near misses. Altogether, therefore, of the twenty-six Tallboy bombs aimed at the Brest shelter, nine scored direct hits and there were two near misses. It was not possible to distinguish between the damage caused by the differently fused bombs, but clearly in each case they penetrated and came to rest before detonation took place. Of the nine direct hits, four did not penetrate the roof, leaving craters approximately 9 metres in diameter and 3 metres deep. Two of these hits were above walls and caused little scabbing, the other two caused scab holes which were about as large as the craters. Most of the scab material remained suspended from the roof by the reinforcing rods. In five instances the craters and scab holes joined and produced holes through the roof with average diameters of about 5 metres. The damage done inside was surprisingly small as the blast evidently spent itself in tearing through the concrete. It would seem that no damage at all was sustained by the U-Boats within and that only four persons were killed in the attacks, three of them being on the roof and the other inside one of the pens. The two near misses produced craters in the ground of nearly 30 metres diameter but did not result in any shock, blast or fragmentation damage to external walls. This information was given in Report No. 140, 'Submarine pens at Brest', of the US Strategic Bombing Survey for which a team had spent a whole week studying the shelter in October 1944 to assess the results of the bombing.

It is possible that the American survey team overlooked one hit, for a French Navy survey, of a later date, did locate another 'major' hit on the cantilivered portion of the roof in front of Pen 1. This hit may however have resulted from another raid, for on several occasions, mainly during attacks by the US Air Force, the shelter had received hits which caused negligible damage — for instance, the American survey team reported numerous small craters, and finding 2,000lb GP bomb casings, a piece from a 500lb SAP bomb, and an unexploded 500lb GP bomb which had been wedged in the bomb-trap superstructure and had failed to explode. Despite the not too impressive internal damage, the bombing did create a considerable mess, and when the French Navy occupied the base after the war they reported a lot of problems: the bombs had not only brought down large amounts of concrete which partially blocked access to the pens just under the craters, but rain trickled into the workshops through the numerous cracks made in the roof, and the drainage system was partly blocked by chunks of fallen concrete. They also reported that apart from the vessels sunk in the pens by the Germans to block them, all manner of things had been thrown in, including vehicles, bombs, mines and grenades — all of which lay hidden at the bottom of the pens, covered by a thick layer of slime since the facilities had gone so long without maintenance.

Brest is a pleasant town, with centuries of naval history, and is still a naval base today. On the River Penfeld in the centre of the town, the Arsenal can be seen to be a hive of activity and, farther to the west, the pens in the U-Bunker are still used to maintain ships

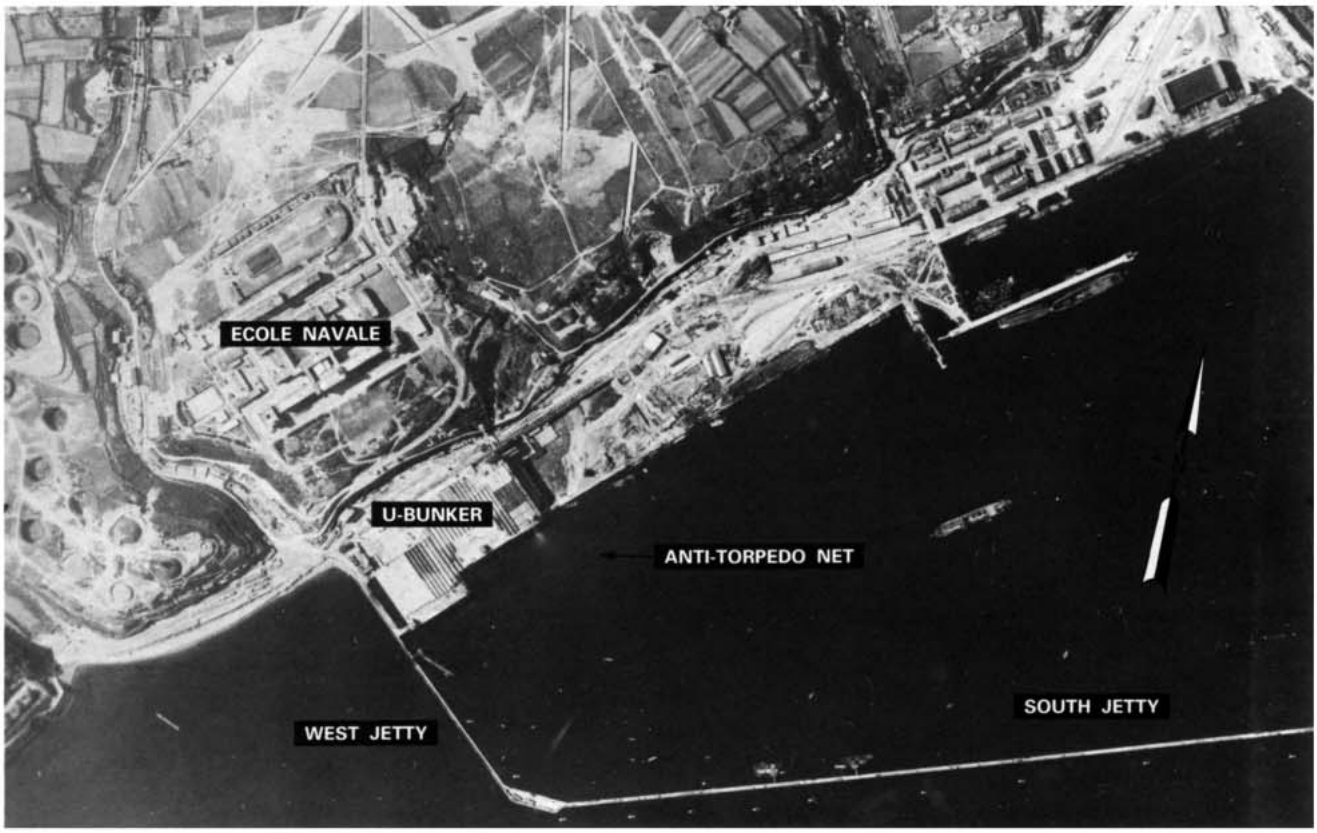


Above: **A camouflaged Type VII, U-201, slowly enters Pen D in 1941. At this time work was still proceeding on Pens A, B and C and 6 and 7 (see plan page 12). (ECP Armées)**
Below: **Brest is still a submarine base today and the pens are out of bounds to civilians. Having received prior permission from the French Navy, our comparison was taken from the Western Jetty.**



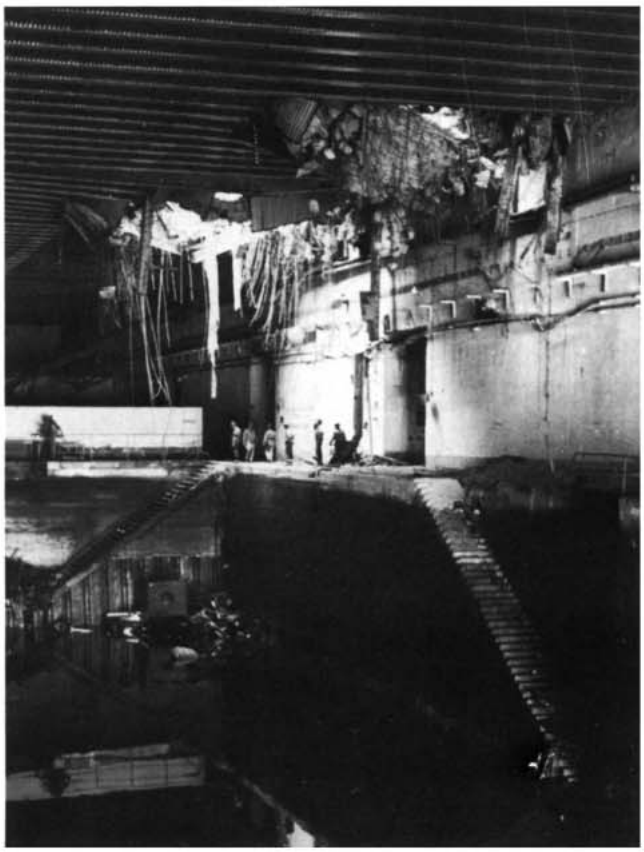
The rear entrance can also be studied from the Route de Corniche. This picture of the south-western fire complex was taken shortly after its capture. (US Army)

The rather fine eagle decoration above the entrance has since been almost but not quite erased and the worst of the bomb damage patched up.



On August 1, 1944 General George Patton, Third Army Commander, gave his famous field order to Major General Leonard T. Gerow of V Corps: 'Take Brest'. This picture from a sortie flown by the US 22 Photoreconnaissance Squadron exactly one week previously would probably have been part of the intelligence used for the forthcoming battle. (Crown Copyright/Keele University)

and submarines of the French Navy. For this reason, the former U-Boat facilities cannot be visited, but both the shelter and the Arsenal can be studied from 'civilian' areas: there is a perfect view inside the Arsenal from the Recouvrance Bridge, and the bunker can be approached from the rear, off the Route de la Corniche. Brest is now the 'nest' of the nuclear submarines which form the basis of the French nuclear deterrent force with their strategic missiles; the former U-Bunker is of course far too small for them and a new and highly secret base has been built on the Ile Longue, some 8 kilometres to the south.



Left: **In November 1944 the United States Strategic Bombing Survey was established with a strength of over 1,100 personnel with the specific duties of reporting on the physical, economic, and other effects of Allied bombing. Of the 200-odd surveys carried out, Brest was chosen as representative of the submarine pens, having experienced both conventional and 'Tallboy' bombing. In these pictures the scale is misleading: remember the roof is between 15 and 20 feet thick! It was penetrated in five places. In the view of the Combined Intelligence Objectives Sub-Committee, the two near misses, although falling within 50 yards, were not considered near enough to test the earthquake effect of the bombs and cause wall failures. (US Army)** *Above:* **The French Navy have chosen the easiest way to seal the Tallboy penetrations by erecting a corrugated iron roof over the hole. (US Army)**

DUNGENESS SPITFIRE

BY ANDY SAUNDERS

A geographical location which time and again is found mentioned in official wartime records relating to aerial warfare over Southern England is Dungeness. This bleak promontory of desolate, flint-pebbled beach juts out into the English Channel at the point where the lush greenery of Kent's Romney Marsh borders with East Sussex, and saw countless scores of aerial battles in the skies above during 1940 and throughout the remainder of the war. Understandably the immediate area became somewhat littered with the wrecks of many aircraft, British and German. Therefore, when Jack Stratfull, ex-Royal Corps of Signals, presented me with a photograph he had taken at Dungeness in 1944, there seemed little chance of identifying the event depicted. The story which unfolded as a result of subsequent investigations was truly remarkable and revealed the events of a dramatic 'dogfight' which saw the shooting down of a Group Captain, Wing Commander and Squadron Leader and the deaths of two young Polish Pilot Officers. All this took place over Dungeness within seconds one day in 1941. That day was Wednesday, April 16.

During 1942, Signalman Jack Stratfull found himself in a party detailed to carry out maintenance work on anti-aircraft communication lines at Dungeness which formed part of the 6th AA Divisional area. In between hammering housewives' used cotton reel bobbins onto telegraph poles for use as insulators and stringing out telephone wires, Jack found time to explore those parts of Dungeness to which access was possible.

Standing close to the seashore towers the grey stone bulk of the 143-foot Dungeness Lighthouse, known locally and to mariners as the 'High Light'. It was here, only yards away from the lighthouse, that Jack discovered a small area of the shingle marked out as if it were a grave, surrounded by a border and marked with a makeshift wooden cross, inscribed, 'Polish Pilot — R.I.P.' Scattered round the immediate area, and lying on the 'grave', Jack found scraps of aircraft metal and was told that a Spitfire had crashed here earlier in the war — its unfortunate Polish pilot having been killed in his aeroplane.

Intrigued as to the background of this unusual grave, Jack's thoughts often turned to what he had seen amongst the pebbles of Dungeness. It was not until the spring of 1944, though, that he again found himself at the same spot and set out to discover if the grave was still there. It was. There was still no identification on the marker cross as to the identity of the Pole, but flowers had been placed there not long before. This time Jack had a camera with him, and had managed to obtain an all too rare film. No doubt he had already contravened King's Regulations, as well as the 1939 Control of Photography Order, by even bringing a camera to such a sensitive military area, but nevertheless he managed to photograph two of his colleagues, Signalmen Miles and Paterson, crouched alongside the grave. Years later Jack's thoughts again turned to this mysterious grave and in 1985 he set out to find it again. Armed with the photograph of the 'grave', Jack went to Dungeness, first calling at the Britannia public house situated near the lighthouse. Here he met a retired local fisherman who remembered clearly that wartime day when 'several British fighters' crashed in the locality. He was able to indicate the 'grave' location, a few yards from the pub, and now just a depression in the shingle. Checking, Jack found that his photograph matched perfectly the surrounding area. The pensioner also mentioned that the day after the crash he visited a friend who lived very near to the crash site and was shown some grisly human remains which he had found and had placed in a sack awaiting collection by the authorities.

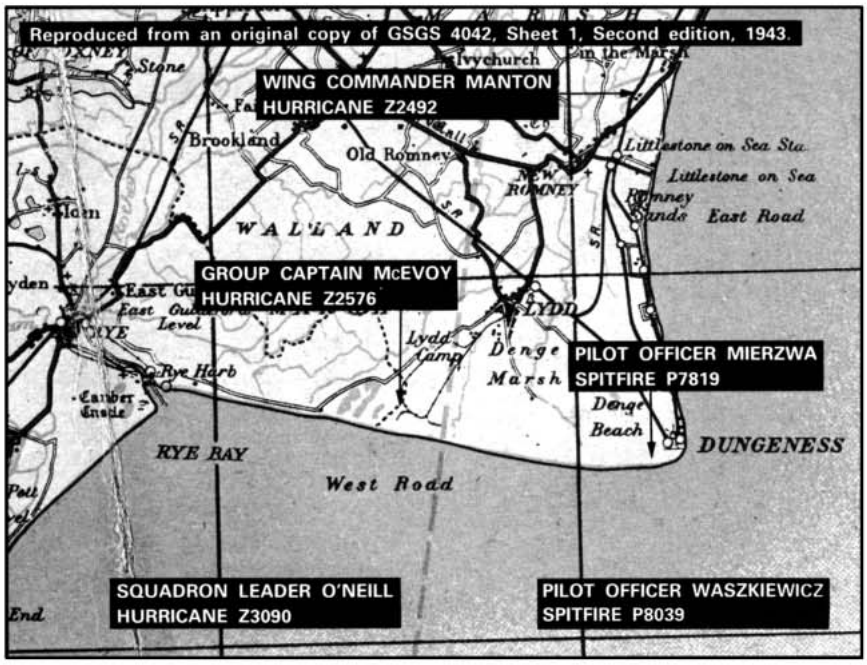
After more than forty years Dungeness has changed vastly, and is now dominated by

Top: **The bleak, barren promontory of Dungeness, since the upsurge of nuclear power development in the late 1950s, overshadowed by the huge atomic power station at Dungeness Point. Here, on April 16, 1941 two young Polish airmen lost their lives in a dramatic dogfight. (Aerofilms)** *Above:* **Lance Corporal Jack Stratfull pictured at the time that he discovered the crash site, marked with a simple cross where one of the pilots met his death.**

German interest in the Dungeness foreshore — photographed from a low-flying Aufklärungs squadron aircraft in the autumn of 1940. The picture shows the precise spot where Jack Stratfull found the lonely marker inscribed 'Polish Pilot R.I.P.' in 1942.

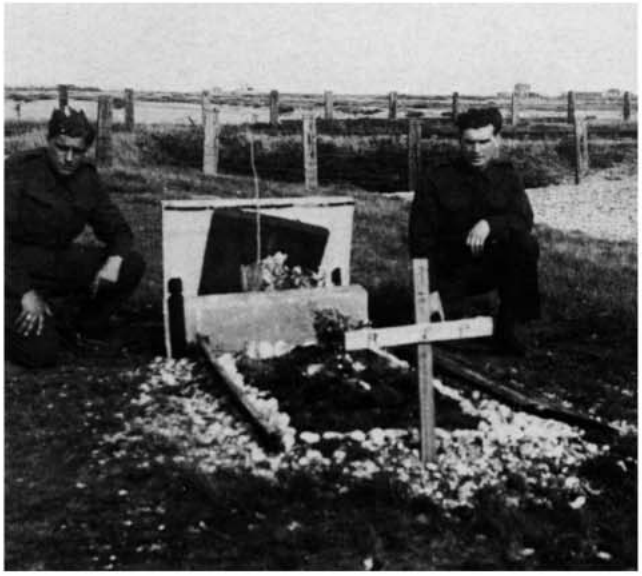
the massive bulk of the atomic power station. The High Light still stands sentinel, but Jack found that no trace of the grave remained. In an effort to find out more he passed the photograph on to me with the request, 'Can you find out about this Polish pilot, please?'

With little information to work from, the chance of identification seemed remote, but slowly, and with perseverance, the whole tale was unravelled. During late 1982 the Hawkinge Aeronautical Trust had excavated for the remains of a Spitfire at Dungeness, close by the lighthouse and, although there was quite clearly a possibility of a number of such crashes in the area, there seemed a fair chance that the site excavated was in fact the very one which Jack Stratfull had visited during the war. Dave Buchanan of the Hawkinge Group then provided useful information which indicated that this indeed was the same site, for although he himself did not have any positive details he did know, from local information, that the site had once been marked with a cross, was said to have been a Spitfire, and its pilot a Pole. Excavation by mechanical digger certainly proved the aircraft was a Spitfire, although of the pilot there was no indication as to his fate, save for a pair of headphones from a flying helmet amongst the wreckage. The flying helmet headphones really did not themselves tell anything about the fate of the pilot, as aircrew often discarded flying headgear in the aeroplane before baling out to avoid entanglement in oxygen and R/T leads. The digging team in fact found no tangible evidence of the pilot, and most of what little remained of the Spitfire was badly smashed, burnt and corroded. The most significant find was probably a small Castle Bromwich Aircraft Factory manufacturer's plate.



Spitfire historian Peter Arnold was able to tell us from similar labels he had seen on surviving airframes that the aircraft in question was probably a Mk II, and probably in the serial range from P7350 to P7973. However, to quote Peter, this could be 'no more than a probability'. He could not be sure that the numbering sequence he had deduced was necessarily followed on all airframes, nor that the rule was conformed to in any way. In any case, this label could have come from a sub-assembly or a replacement section, thus ensuring that we would be dealing with an exception to the rule! It was, however, somewhere to start looking, and in the batch of numbers that Peter had quoted there were some possibilities. Given that we were assuming the pilot to have been a Pole, we discovered that a No. 308 (Polish) Squadron Spitfire, P7606, had been lost on August 29, 1941. However, further investigations revealed that P7606 could not be a likely candidate for the Dungeness aeroplane.

Another, P7819, looked more promising. It had been lost with No. 303 (Polish)



Jack Stratfull's snapshot of the crash site in the spring of 1944. Signallers Miles and Paterson pose for the camera.

Jack returned to the site with us in September 1986. The 'grave' was actually sited a few feet from the crash.

Squadron on April 16, 1941 and over Dungeness. However, this by no means established the identity of our Spitfire, as there had undoubtedly been scores of such losses in that area, and although it was from a Polish squadron, the pilot need not necessarily have been a Pole. Conversely, the pilot of the Dungeness Spitfire could even have been a Pole serving with a non-Polish squadron. It was, however, a lead worth checking further, and it seemed that the next logical step was to attempt to discover exactly where the pilot of the Spitfire had been buried. From Dave Buchanan's evidence it seemed that he had not been left in the wreckage, and the original cross marker would at least indicate that he had been killed.

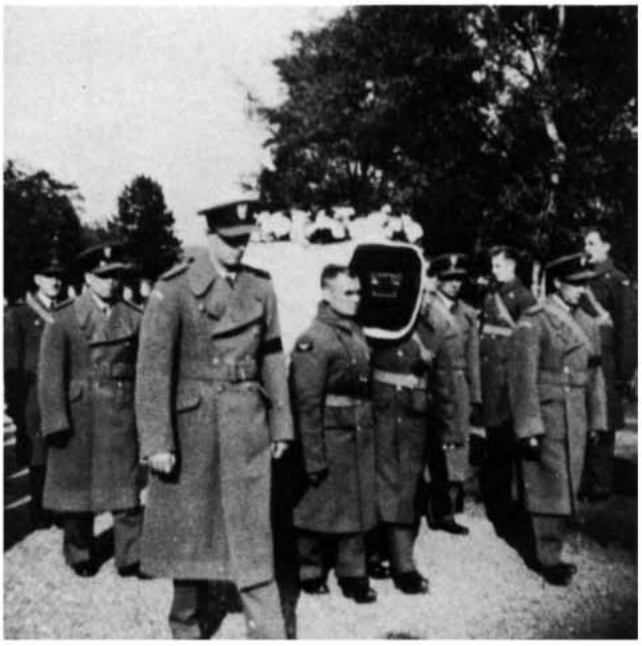
The next clue was provided by the inveterate aviation historian Peter Foote. As long ago as 1961, Peter had known of this crash through his interview in November of that year with a former Lydd Division policeman. Ex-PC Tye had told Peter that a Spitfire had crashed and blown up near the old lighthouse at Dungeness, killing its Polish pilot. As far as he could recall this was during the Battle of Britain, and he remembered vividly that some twenty servicemen searched the area for remains of the pilot. Having completed this grisly task, the remains were placed in sandbags whilst the men all knelt and recited the Lord's Prayer. Certainly PC Tye was remembering the same incident, as he further recalled that a cross was later placed on the spot. Furthermore, he provided what seemed to be the most vital clue yet — that the body had been buried at Hawkinge.

A check with the Commonwealth War Graves Registers drew a blank. Only one possibility existed, and this was the grave of Pilot Officer Stanislaw Cztermastek, 76693, but he had died in a crash at Whitfield on February 5, 1941, whilst serving with No. 615 Squadron at Kenley — a Hurricane unit. No other graves existed here which could be linked to the Dungeness crash, not even 'Unknown Airmen' — Polish or otherwise. Obviously the only possibility was to track down further details on the loss of P7819 and to seek out information from official sources as to the identity of the pilot.

Working on the assumption that P7819 was the aeroplane involved, the records held by the Air Historical Branch (MoD) were consulted and revealed the following details: On April 16, 1941, Spitfire P7819 of No. 303 Squadron had been shot down at 5.30 p.m., crashing on the shore at Dungeness and killing its pilot, Pilot Officer B. Mierzwa. Here, at last, was the link we had been seeking — although there was still a possibility that another aeroplane may have been that which had crashed alongside the lighthouse! Indeed, the AHB records went on to state that in the same engagement, another Spitfire of No. 303 Squadron (P8039) had been lost. This was flown by Pilot Officer M. Waszkiewicz, who was assumed to have lost his life at sea. However, given the fact that there had been a grave marker at the crash site, could this have been Waszkiewicz's aeroplane? Certainly Waszkiewicz was missing with no known grave, whereas Mierzwa was buried in Grave 290, Section H, of Northwood Cemetery, Ruislip. The latter certainly could not be made to 'fit' ex-PC Tye's recollections of the body being buried at Hawkinge. So, unless other information could be obtained it seemed that we could only place an assumption on Jack Stratfull's photograph that the crash site depicted was possibly that of Mierzwa or Waszkiewicz.

Fortunately, Captain Waclaw Milewski of

Above: **The excavation of P7819 by the Hawkinge Aeronautical Trust, underway in 1982, looking towards the power station.** *Below:* **The manufacturer's plate found during the dig.**



Pilot Officer Boguslaw Mierzwa was born in Warsaw on March 14, 1918 and saw action in Poland during September 1939. He joined No. 303 (Polish) Squadron on August 21, 1940. He is seen here at a dinner party given by Mrs Arthur Smith-Bingham in February 1941. After recovery from the wreckage of his Spitfire, his remains were buried at Northwood Cemetery, Ruislip, by his brother Poles in Section H, Grave 290, on April 20, 1941.

The Polish Institute and Sikorski Museum proved as helpful as ever and delved into his archives to assist. On checking files for these two men he was able to confirm the facts quoted in AHB records, but, more than this, the file for Boguslaw Mierzwa stated that he had crashed close to the lighthouse at Dungeness. Even a map reference was quoted from the old Ordnance Survey Military Grid which checked out to the precise spot where Jack Stratfull had taken his photograph and Dave Buchanan's team had excavated. Proof positive! Mieczyslaw Waszkiewicz, the records confirmed, had gone into the sea off Dungeness and had never been found. So, whilst Mr Tye's recall concerning Mierzwa's grave location had been a little suspect, all the other facts and deductions had led nicely to this conclusion. All that remained now was to investigate more thoroughly the facts behind the loss of these two men . . . and that was where the story developed into a most interesting one.

Pilot Officer Mieczyslaw Waszkiewicz was born in Wilno, Poland, on March 27, 1917, being awarded his pilot's wings on June 15, 1939. After the Polish campaign he escaped to Romania on September 18, 1939 and then on to England via France. Following service with Nos. 307 and 32 Squadrons, he joined 303 on March 26, 1941 only to be posted missing after the air battle on April 16.

April 16, 1941 was a near-perfect early spring day with maximum visibility, light westerly breezes and blue skies flecked with small patches of high cirrus cloud. The moderate temperatures made this one of the finest days of the year so far and, the previous fortnight having been dull, overcast and drizzly with poor visibility, a 'circus' was organised between RAF Fighter and Bomber Commands to send six Blenheims of No. 21 Squadron on a heavily escorted mission to bomb the Luftwaffe fighter airfield of Berck-sur-Mer. The escort squadrons were to be both from the Northolt Wing, No. 303 Squadron (Spitfires) flying top cover, with No. 601 (Hurricanes) flying close escort on the bombers. Both squadrons took off from Northolt at around 4.45 p.m. and, after a rendezvous with the Blenheims over Kent at a mere 300 feet, set course for the French coast whilst climbing to bombing height.

On the outward flight, approximately fifteen Messerschmitt Bf 109s were seen flying some distance away, but as they did not seem intent on threatening this large formation they were left to their own devices. The operation was uneventful until the Blenheims had delivered their bombs — on target — and the entire formation had wheeled and turned for home; then, shortly before 5.30 p.m., it turned into a nightmarish shambles.

'Messerschmitts! Messerschmitts!', a frantic pilot called into his microphone and, as he did so, silver-grey tracer streaked past Wing Commander Manton's Hurricane, at the same time delivering jackhammer blows on the armour plate behind him. 'Minnie' Manton had been appointed as one of the first of the Wing Leaders, being posted Wing Leader for the Northolt Wing. This was his first operational flight in that post, but as there was no accepted doctrine at this time as to exactly how leading in the air was to be done, he was flying freelance to observe and, if necessary, to oversee the aircraft in the formation. Both 303 and 601 Squadrons were led in the air on this day by their own CO's. Leading 601 was Squadron Leader J. R. 'Peggy' O'Neill. Also in the formation with 601 on this day was Group Captain T. N. McEvoy, Station Commander of RAF Northolt, 'along for the ride' in a spare 601 Squadron Hurricane. McEvoy flew as No. 2 to O'Neill, close to the head of the Hurricane formation which was slightly above and behind the Blenheims. Manton, meanwhile, also in a spare 601 Squadron Hurricane, flew behind and below 601 Squadron whilst, above them all, flew the Spitfires of 303 Squadron. Consequently, in view of his position, Manton was the first of the Hurricanes to go when the German aircraft struck.

Undoubtedly, the Messerschmitts seen on the outward leg were those that had now fallen on the formation in a most ferocious manner. 'Minnie' Manton had seen them in the distance, going in the opposite direction and climbing, but decided that 303 would no doubt deal with them once the Messerschmitts were ready to attack. Unfortunately, the attack came before any intervention by 303 Squadron could take place!

As the cannon shells and bullets struck home, Manton's aeroplane shook and rolled to the right, diving as it did so. The canopy hood flew off, oxygen and R/T leads were cut and went over the side and his left arm and leg stung. Eventually he managed to get his aeroplane under some sort of control and, pointing it away from the French coast, surveyed the shambles which had once been a Hurricane. The stick was hard back, but the aeroplane was still in a dive and with glycol now spattering onto his goggles, a bale-out into the Channel seemed highly probable. Throttling back, the aircraft again went into a steeper dive until Manton prepared himself for an unscheduled swim, but one look at the cold English Channel

Group Captain Manton, seen here later in the war when CO of No. 907 Wing in Burma.

Squadron Leader J. R. 'Peggy' O'Neill (left) and Flight Lieutenant Whitney-Straight at Northolt in 1941.

changed his mind about baling out. He would land the Hurricane if he could.

Opening up the throttle in order to get the nose up, it was his intention if possible to make for Hawkinge, which lay just behind the coastline at Folkestone. However, with his altitude now down to about 300 feet, he doubted that he would make the hill on which Hawkinge aerodrome was perched. Just short of Hythe his radiator temperature went into the red and, too low for a bale-out, he crossed the coast at Dungeness and prepared himself for a crash landing. His Sutton harness, he discovered, was loose and useless, having been shot away from its anchorage point behind the armour plate. Turning inland, he prepared for a belly landing amongst the anti-invasion obstruction posts and, closing the throttle when holding off, the aircraft rolled to the right and the wing dug in.

When he came to his senses, he found himself sitting on the front seat of an Army lorry being driven to a first aid post; the driver, an Army Pioneer, had seen the crash and rescued him. The spot where he had come down was between New Romney and Dymchurch, midway between 'Slinches' and Jessen Farm, straddling one of the drainage ditches which criss-cross the marshland of that area. His Hurricane, Z2492, was written off in the crash, its Rolls-Royce Merlin engine being torn out of its mountings and ending up on the opposite side of the 'New Sewer' drainage ditch from the mainframe. Manton had a lucky escape, despite heavy bruising, cannon shell wounds, a nasty gash on the forehead and a chipped spine. But even as he was being whisked away for treatment, others in his formation were, at that very moment, also enduring hard times!

As the Messerschmitts attacked, Squadron Leader O'Neill went into what McEvoy (now Air Chief Marshal Sir Theodore McEvoy, KCB, CBE) later described as 'a rather leisurely left turn'. More than forty years later Squadron Leader O'Neill (now Group Captain) concedes that he made a 'tactical error' by 'breaking a bit too slow when the 109s came down', and whilst this error had dire consequences for both O'Neill and McEvoy, Manton was already hit and done for by the time O'Neill's fateful turn had commenced. More telling, however, in the part played during the decimation of the two fighter squadrons on this day was the archaic 'Hendon Pageant' close-formation flying still employed by RAF Fighter Command, despite months of bitter experience in 1940. If the lesson had been learned why was nothing done about it? No doubt this thought entered many a pilot's head as he struggled to maintain close formation only feet from the wingtip, tail, or bulbous oil-cooler housing of another aeroplane — far too busy in the task of maintaining station to look out for the enemy. The task of look-out was left to the weavers, who themselves were often the first to be hit! There was no time, though, for such tactical deliberations in McEvoy's mind. The shout of 'Messerschmitts' came at the same instant as the grey tracer streaked past him.

McEvoy's job as the leader's No. 2 was to protect O'Neill, and despite his instinct to reef round in a tight turn he stuck to O'Neill and followed him into the slow left turn. As he did so there was a loud bang at the back of his head and a number of the instruments in front of him vanished into a mass of glass splinters, as a jet of hot glycol gushed against his right leg. 'I must confess,' wrote McEvoy, 'that this drove from my mind any further concern for 'Peggy' and I split-arsed round to avoid more damage and to try to return the compliment to my attacker. A 360-degree turn showed nothing, but on straightening out I got another good burst of fire. I then did what I knew all good fighter pilots said was fatal — I went into a spin. I spun from 15,000 feet to 5,000 feet, at which height I pulled out meaning to head for home, as I knew that Hurricanes were apt to catch fire when glycol was exhausted; and glycol was continuing to soak me. The trouble was that over a calm, hazy sea with no land in sight and a spinning compass the way to go home was far from clear. To let the compass settle down I had to fly straight and level, so if my German friend were still around, this would be his chance. I have never known a compass to take so long to settle, but eventually it did and I flew north without further attack. After what seemed to be a long time I saw through the haze the yellow gleam of the beach at Dungeness. I knew that the beach there was mined but my coolant temperature was now off the clock and I decided to chance a landing there rather than bale out over the sea. I put my flaps down but kept my undercarriage up and went for the clearest bit of beach I could see. When I finally touched, the deceleration was fantastic with the radiator-scoop digging into the shingle — my neck seemed to stretch out like a goose in full flight. I sat there waiting for a

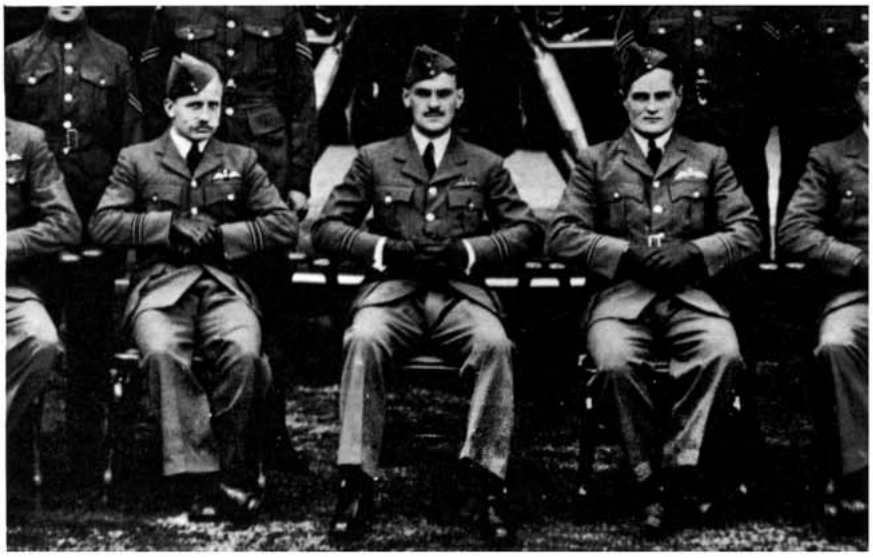
Members of 'A' Flight, 601 Squadron at Northolt. Centre row: Flight Lieutenant Whitney-Straight (second from left) and Squadron Leader O'Neill (on his left).

soldier to come to show me the way through the minefield in which I had landed. Soon enough he did and took me to the gunners' mess. There I was given a welcome whisky and their MO had a look at my head, which had been liberally punctured by fragments from a cannon shell which had exploded on the head armour which must have saved my life. I was well soaked in blood but a bandage stopped further bleeding and I got a car to take me to Hawkinge, where I rang Northolt to have the Miles Mentor sent for me. But it was by then late evening, so I spent the night at Hawkinge and flew back to Northolt next day to gather all the news of the rest of our ill-starred operation. It turned out that one of the few pilots to draw a bead on a Messerschmitt had been Whitney-Straight, who found, on pressing the button, that his guns had not been loaded!'

McEvoy had finally come to rest just across the Kent border inside Sussex, on the shingle of The Wicks, midway between Camber Sands and Lydd, and on the very edge of Lydd Army Ranges. His Hurricane, Z2576, was a write off.

O'Neill himself had not fared any better, despite having avoided the initial onslaught to stay in the air a few minutes longer than the unfortunate Manton and McEvoy. In the mêlée that followed he drew a bead on a Bf 109 which was circling below him, and subsequently, having claimed hits on the aeroplane, he was credited with one Bf 109 destroyed, although, writing in 1986, he says that 'this claim should really have been only as "damaged" in retrospect'. This conclusion is, as we shall see later, fully vindicated by examination of German losses, although he can draw some measure of satisfaction from the fact that the Germans themselves heavily 'over-claimed' for victories that day.

Shortly after his engagement with the 109, he called the others and told them to head for home. The sky seemed to be empty and then, from nowhere, there were thumps from aft and below the cockpit and his left leg was hit. Unlike Manton and McEvoy, he had no choice but to bale out of his badly damaged Hurricane, Z3090, drifting down on his parachute to land in Rye Bay whilst his Hurricane plunged into the sea. His position was marked overhead by Flight Lieutenant Whitney-Straight, the fabulously rich and ultra-flamboyant 601 Squadron 'B' Flight Commander, who circled in his unarmed Hurricane. By exposing himself to further attack through loitering in the 'hot' area in an impotent fighter, Whitney-Straight displayed characteristic coolness and courage, and as an RAF high-speed launch plucked the exhausted and bleeding Squadron Leader out of the Channel twenty minutes later, Whitney-Straight calmly snapped the scene on his camera which he had with him in the cockpit! His coolness, however, had helped to save his CO, who was soon tucked up in a Dover hospital. The ordeal of 601 was over, but 303 Squadron, too, had taken a pasting.



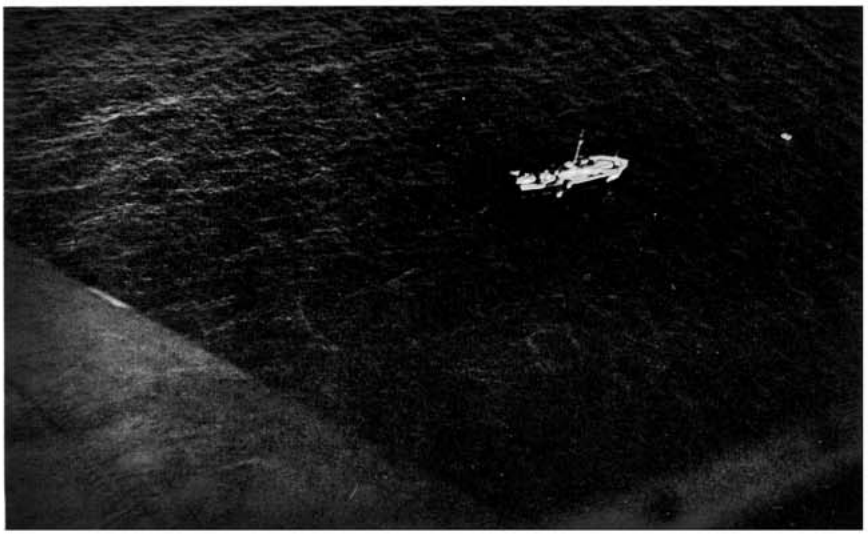
Group Captain Theodore McEvoy (centre) when stationed at Tangmere with No. 1 Squadron in July 1936.

As the Messerschmitts had come down in the attack the very first to go were 303's weavers, Pilot Officers Waszkiewicz and Mierzwa. Hit from behind, both took terrific punishment from the Messerschmitts' 20mm cannon and 7.92mm machine guns. They probably never knew what had hit them, and never had the chance to shout a warning. Waszkiewicz plunged into the sea, no doubt dead over his controls, a momentary plume of spray and slick of oil being his only grave marker. Fractionally later Mierzwa followed the same way, his Spitfire roaring with awful ferocity into the pebble beach of Dungeness and shaking even the foundations of the solid and immovable lighthouse just yards away. It was some time before those on the ground could approach the blazing wreckage, although 'wreckage' is probably an incorrect term to describe the scene which met the gaze of those nearby. Almost nothing remained to show that an aeroplane had crashed here; the terrible inferno had sent exploding ammunition flying in all directions together with razor-sharp flakes of flint from the pebbles which were shattering in the intense heat. When the blaze had died down, a small heap of white ash and molten aluminium lay around a shallow, blackened depression in the beach, the scorched pebbles having fallen back into the crater which had been viciously carved out by the crash. When the stomach-churning task of picking through the wreckage had finished, the pitiful remains were taken away for burial by his brother Poles at Northwood. By some miracle, Boguslaw Mierzwa's indentification had survived the crash.

Pilot Officer Strembosz was the next to be singled out for attention. More fortunate than his two comrades, he managed to limp back home to Northolt, albeit wounded and with a badly shot-up Spitfire. He landed at Northolt at 6.10 p.m., just ahead of the remaining nine badly shaken pilots. Meanwhile, moved by the young Pole's sacrifice, a person or persons unknown turned the scene of his death into a memorial by erecting a wooden cross and tending the spot as if it were a grave, creating the scene later recorded by Jack Stratfull. There have been thoughts about re-marking the spot again, but plans for the European Fixed Link mean that the area of Dungeness where Mierzwa's Spitfire crashed will possibly be made into the huge deep-water harbour required for the cross-Channel tunnel construction work.

But what of the victorious Messerschmitts and what became of Squadron Leader O'Neill's claim? The units involved were none other than Major Werner Mölders' Stab and IV/JG51 and Major Maltzahn's Stab and 1/JG53. It would appear that the first to attack were JG53 who came upon them as they approached the English coast. Leutnant Franz Schiess, flying as Rottenflieger (his number 2) to von Maltzahn, wrote the following account in his diary:

'Twelve Spitfires over Berck-sur-Mer; the boys can trap them. From 8,000 metres we dive to 3,000 metres in order to cut off the Englishmen's retreat. In the middle of the Channel we come up against a whole formation of aircraft. These cannot be our own, one realises, due to the tight formation in which they fly. In order not to be seen, we sit up in the sun, and wait for the most favourable attacking position. We then fly up behind the formation, as though we ourselves were Spitfires. Over Dungeness, the Englishmen make a shallow right turn, and the outer man on the right becomes a



A remarkable photograph snapped by Flight Lieutenant Whitney-Straight as he circled the RAF high-speed launch rescuing Squadron Leader O'Neill from Rye Bay.

A 1941 line up of Jagdgeschwader 53 pilots at Berck-sur-Mer. Leutnant Franz Schiess stands at the far left of the picture, with Major Freiherr Günther von Maltzahn fourth from the left.

little separated. The Kommodore [von Maltzahn] drew up quite close to this Tommy and opened fire from about 50 metres. The Spitfire at once rolled to the left and went into a vertical dive, trailing a long white banner. The Kommodore at once pulled up to the right, leaving me free to attack. I closed on the Spitfire before last, and as I prepared to open fire he saw me and jerked his aircraft sharply around to the right. I aimed a little ahead of him and opened fire. I saw hits in the fuselage and around the cockpit, and then the Spitfire rolled to starboard and fell away. As I dived after him I twisted my head round. Thank God I did! A whole bunch of Spitfires were coming down after me. I flung the stick into the corner and went hell-for-leather. After a few seconds I shook them off and flew home. A short time after I had landed, the Kommodore appeared, waggling his wings over the airfield. All were filled with enthusiasm and each member of the ground crew wanted to shake his hand. I was only sorry that I did not see what happened to the Spitfire that I had fired at.'

One more claim was made by JG53, Leutnant Rohrig also claimed a Spitfire, and Leutnant Schramm claimed hits on two others.

As soon as JG53 had attacked, JG51 joined in the fray, going for 601 Squadron's Hurricanes as they tried to fight off the Messerschmitts, and the following claims were made: Leutnant Heinz Bar a Hurricane at 5.25 p.m., and his leader, Hauptmann Hermann-Friedrich Joppien, Kommandeur of I. Gruppe, another destroyed five minutes later; Major Mölders a Spitfire at 5.32 p.m. and a Hurricane at 5.40 p.m.; Oberleutnant Geyer a Spitfire (time not known). Oberleutnant Hartmann Grasser fired on a Spitfire at 5.42 p.m., but this was not confirmed. All these pilots were members of the Stabstaffel. Meanwhile, Leutnant Seelmann of IV/JG51 had claimed a Hurricane at 5.37 p.m.

Exactly who shot down who is now difficult to establish, but what does seem certain is that JG53 engaged the Spitfires of 303 Squadron. In all probability, Waszkiewicz was von Maltzahn's victim, whilst the hits which Franz Schiess registered immediately afterwards on another Spitfire 'around the fuselage and cockpit' were probably the fatal blows which struck Mierzwa from the sky. Schiess himself was, perhaps, the 109 which O'Neill had claimed, as it would seem likely that O'Neill mistook the thick smoke trail from Schiess' flat-out DB601 engine for battle damage as he streaked home to France. However, examination of the other German claims for this day against known RAF losses shows quite clearly the heavy over-claiming by the Luftwaffe. On the credit side for the RAF were the hits registered by No. 21 Squadron's bombs on the airfield of Berck-sur-Mer, seven of III/JG53's new Bf 109 F2 aircraft suffering varying degrees of damage, some of it serious. (Werke Nr's 5425, 6699, 8101, 8103, 8109, 12608 and 12610 being the victims.) All of the Blenheims returned home safely.

Even today Dungeness has a sparse population, but in 1941 there were even fewer people living there. Consequently, it has been very difficult to find anyone who actually saw what happened, although one person has been traced with knowledge of the event. Fisherman Don Richardson was then a schoolboy playing happily on the beach when the Spitfire roared out of the frantic dogfight developing in the skies above him. Although it smashed into the beach not far from him, he was unable to get to the spot for some weeks because of the minefield which separated the site from his parents' bungalow. When he finally did get there he was amazed at how little there was to see. A small hole with a few pieces of aluminium littered around was all that remained, the biggest piece being 'about the size of a sheet of newspaper'.

The 'Post-Op' conference held to examine the faults, problems and mistakes of April 16, 1941, highlighted the need for more flexible formations — if indeed such problems needed highlighting! The only positive and immediate result of this operation which had cost two lives and the shooting down of a Group Captain, Wing Commander and Squadron Leader (nine-and-a-half stripes in two minutes!) was the institution of a rear cover wing to protect escorts returning short of fuel. The ranks of those shot down no doubt helped to crystallise the elements of change which soon permeated Fighter Command's tactics. Sadly, for two young Poles such changes were too late.

A corner of England which is for ever Polish — the war graves section at Northwood Cemetery.

POR
B. MIERZWA
303 SQDN
16TH APRIL 1941 AGE 23
POLISH FORCES